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Secondary Privatization in the Czech Republic: Changes in Ownership and Enterprise Performance in Voucher-Privatized Firms

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Preface

This volume contains the output of country research undertaken in the Czech Republic in 2000–2001 by Evžen Kočenda and Juraj Valachy (CERGE) under the international comparative project "**Secondary Privatization: the Evolution of Ownership Structures of Privatized Enterprises**". The project was supported by the European Union's Phare ACE* Programme 1997 (project P97-8201 R) and was coordinated by Barbara Błaszczyk of the Center for Social and Economic Research (CASE) in Warsaw, Poland.

The support of the ACE Programme made it possible to organize the cooperation of an international group of scholars (from the Czech Republic, France, Poland, Slovenia and the U.K.). The entire project was devoted to the investigation of secondary ownership changes in enterprises privatized in special privatization schemes (i.e., mass privatization schemes and MEBOs**) in three Central European countries – the Czech Republic, Poland and Slovenia. Through a combination of different research methods, such as secondary analysis of previous research, analysis of legal and other regulatory instruments, original field research, statistical data base research and econometric analysis of individual enterprise data, the project aimed to investigate the scope, pace and trends in secondary ownership changes, the factors and barriers affecting them and the degree of ownership concentration resulting from them.

Following the presentation of a clear picture of the economic outcomes of the voucher privatization in the Czech Republic, the paper turns to the initial changes in ownership structures of privatized companies. The main types of new owners are identified and the emerging trends of ownership concentration analyzed. The second part of this publication is devoted to a description of post-privatization transactions and their influence on the further re-allocation and concentration of ownership. The interconnection between secondary changes in ownership structure and economic performance of a sample of companies traded on the Prague Stock Exchange is investigated using various econometric instruments.

We hope that the results of this research will be of great interest for everyone interested in the little-researched question of what has happened to companies *after* privatization in transition countries.

Barbara Błaszczyk

* "Action for Cooperation in the Field of Economics".

** Management-Employee Buyouts.

Part I.
The Privatization Process in the Czech Republic: Setting for Ownership Structures

This chapter provides a comprehensive background of the privatization process in the Czech Republic in order to establish an appropriate framework for further analysis of the ownership structures within the emerging market economy. It outlines the most important issues of the privatization process, including the role of privatization investment funds, as well as the role of residual state property as an object of further privatization. The chapter also offers an overview of several empirical assessments dealing with issues of ownership structure and performance of privatized firms. The analysis of the evolution of ownership concentration from 1993 to 1999 covers the issue of ownership structure changes on a general level as a prelude to the analysis in Part II.

1.1. Overview and Introduction

Privatization in the Czech Republic was carried out under three programs: restitution, small-scale privatization and large-scale (or mass) privatization. The first two started in 1990 and were most important during the early years of transition. Large privatization began in 1991[1].

Restitution restored assets to those who had owned them before they were nationalized by the communist regime after 1948. Estimates of the amount of property involved in restitution are sketchy since implementation was carried out by direct negotiation between current and former owners. There have been at least 200,000 claims for agricultural land. In addition, about 70,000 apartment buildings have been returned to their former owners. The most important feature of the restitution program is that owners of industrial property incorporated into larger enterprises (or expanded by new investment since nationalization) were entitled to receive a share of the enterprise when it was privatized. In addition, they could purchase an additional part of the enterprise on preferential terms (usually at book value and without having to compete with other potential buyers).

Small-scale privatization concerned primarily small economic units such as shops, restaurants or smaller industrial enterprises that were sold at public auction. Bidding was restricted to Czech citizens or corporations formed by such citizens. Buyers were not allowed to transfer property to foreigners. By the end of 1992, over 22,000 units with a total sale price of about $1 billion had been privatized through small-scale privatization. At least 10,000 additional units were approved for sale at later dates. Although there was no explicit limitation on the size of property that could be auctioned in small-scale privatization, the program focused on small businesses engaged primarily in retail trade. By the end of 1993, when the program was officially terminated, 30.4 billion crowns' worth of property had been sold to private owners.

Large (Mass) Privatization was by far the most important privatization program in the Czech Republic. This process began in the Spring of 1991 and was formally concluded in the Spring of 1995. Enterprises not privatized through restitution or small-scale privatization were divided into four groups:

– firms to be privatized in the first wave of large-scale privatization,

– firms to be privatized in the second wave of large-scale privatization,

– firms to be privatized later (after five years), and

– firms to be liquidated.

It is clear that the first two categories of firms form the "core" of the initial pool of state property designated for privatization. In the beginning it was the Ministry of Privatization that executed the process. Later on, the Fund for National Property (FNP) was established as a state institution with legal power to exercise property rights over the companies that were fully or partially owned by the state.

Large-scale privatization allowed combinations of several privatization techniques: small businesses were typically auctioned or sold in tenders; medium-sized businesses were sold in tenders or to a predetermined buyer (direct sales). The largest firms were transformed into joint stock

[1] For classical approaches and analysis of pre-privatization and privatization issues see, among others, Blanchard, Dornbusch, Krugman, Layard, and Summers (1991), Aghion, Blanchard, and Burgess (1994), and Aghion, Blanchard, and Carlin (1994).

companies, whose shares were distributed within voucher privatization (almost one half of the total number of all shares of all joint stock companies was privatized in this manner), sold for cash or transferred for free to municipalities. Municipalities also benefited from transfers of property, mostly unused land within their territory.

As mentioned earlier, large-scale privatization (including voucher privatization) was launched in 1991. When, on 1 January, 1993, Czechoslovakia was divided to form the Czech and Slovak Republics, voucher privatization continued only in the Czech Republic, while Slovakia adopted bond privatization[2]. The course of large-scale privatization over time in nominal monetary units as well as in numbers of companies is presented in Table 1.1.

Five methods of ownership transfer were employed, and cumulative figures for successive years show the nominal outcome[3]. Joint stock companies formed the most frequent and important vehicle of ownership transfer. Around 80% of property allocated for large-scale privatization was transformed by means of joint stock companies. Almost half of them originated as a result of the voucher scheme; others shifted to this legal status by other ways. As a result, almost 40% of the property within the scope of large privatization was privatized through the voucher scheme. Thus, the voucher scheme, being only one of many possible methods of ownership transfer, became one of the most decisive factors in the post-privatization ownership distribution.

Much has been written in the transition literature about voucher privatization, and some of the outcomes of the previous research will be referred to later on. Here, the main results are outlined. As a summary, Table 1.2 shows the process of voucher privatization translated into the major figures, broken down by the two "waves" in which it was conducted.

The scale of the voucher program can be appreciated by examining the share of total assets involved. In 1990 the official book value of all capital in the Czech Republic was Kcs 2,604 billion[4] (about US$95 billion). Of this, about Kcs 1,000 billion was included at the beginning of large-scale privatization. Firms in the first wave of the voucher program had a book value of about Kcs 331 billion, of which 212.5 billion was allocated to vouchers. Thus, the first wave of the voucher program included about 7.5% of the total country's capital assets. The second, somewhat smaller wave, was completed by the end of 1994 and accounted for about 4.5% of the country's assets.

An additional illustration of the scope of the program is the fact that 988 firms out of the 2,404 firms in the first

Table 1.1: Large scale privatization in the Czech Republic

	Property June 1993 mil.CZK	Units June 1993	Property June 1994 mil.CZK	Units June 1994	Property June 1995 mil.CZK	Units June 1995	Property June 1996 mil.CZK	Units June 1996
Total Property	607,635	4,893	922,041	16,071	950,463	20,917	963,453	22,190
Auction	5,634	431	10,057	1,714	9,378	2,110	9,360	2,054
Tender	16,434	424	27,931	887	31,236	1,351	36,544	1,750
Direct Sale	38,016	1,359	86,407	7,713	90,463	10,899	90,156	11,436
Joint Stock Comp.	534,779	1,327	756,008	1,897	765,941	1,875	774,955	1,914
Free Transfer	12,772	1,352	41,998	3,860	53,445	4,700	52,438	5,036

Source: Ministry of Finance

Table 1.2: The two waves of voucher privatization

	Wave 1	Wave 2
No. of state enterprises entering the voucher scheme	988	861
Book value of shares allocated for vouchers in particular wave (billions of crowns)	212.5	155.0
Participating citizens (in millions)	5.98	6.16
Average accounting value of assets per participating citizen (crowns)	35,535	25,160
% of voucher points with PIFs	72.2%	63.5%

Source: Ministry of Finance, Ministry of Privatization

[2] Further description of privatization in Slovakia can be found in Marcincin (1997).

[3] Cumulative figures regarding privatized property are in some categories higher in 1995 than in 1996. This is due to some minor repurchases by the state and return-transfers by municipalities.

[4] We adopt standard Czech monetary notation. Prior to the split of the country the Czechoslovak koruna (crown) was abbreviated Kcs and placed before the numeric figure. After January 1993, the Czech koruna was abbreviated CZK and placed after the numerals.

wave had some or all of their shares allocated to the voucher program. The vast majority of these firms distributed over half of their net worth through vouchers, with an average of 61.4% of capital being placed in the voucher scheme. The second largest share (23.3%) was retained by the FNP. Similar trends were observed in the second wave.

1.2. The Role of Privatization Investment Funds in the Privatization Process

Privatization Investment Funds (PIF) took an active part in carrying out the voucher scheme[5]. As a result of their participation the PIFs belong to the important owners of equity in the Czech voucher-privatized firms.

The funds represented the most popular way for citizens to invest their vouchers in the voucher privatization. All Czech citizens over the age of 18 who resided in the Czech or Slovak Republic could participate in the voucher process. Each participant could purchase a book of 1,000 voucher points for a fee of Kcs 1,000 (a little over one week's wage for the average worker in 1992). Before the bidding process started, each voucher holder had had the option to bid directly for a company or to assign all or part of his or her points to one or more Privatization Investment Funds (PIF).

These PIFs had to provide basic information regarding their ownership and investment strategy. In addition, information regarding profitability, sales, growth rates, and the extent of proposed foreign involvement for each firm was provided in a booklet available to all voucher holders. Anyone who brought a diskette to the privatization offices could obtain this information in a database designed to make analyses easy. A great number of citizens opted to put their stakes into the funds. For these vouchers, the funds acquired shares in numerous companies.

The first wave of voucher privatization started slowly. During the first two months in which citizens could buy voucher coupons, only a few hundred thousand did so. By January of 1992, official estimates were that only about 20% of eligible participants would purchase books before the official deadline at the end of February. However, in the next two months demand soared, largely in response to advertisements by several of the PIFs guaranteeing returns of 1,000% in one year[6]. In the end, 75% of those eligible to participate did so. About 72% of the voucher points were placed for bidding with the 264 PIFs in the Czech Republic, while 28% were used for individual bidding. During the second wave about 63% of the voucher points were placed with privatization funds (see Table 1.2).

The founding institutions of the privatization funds originated from a broad spectrum of corporate entities. A significant number of them were financial institutions of various types referred to as banks. Under the term bank we include not only typical banking houses and their sister companies but also insurance companies and their sisters as well. The rest of the funds were created by other institutions. The majority of these institutions were manufacturing works. Their activities were supposed to be related to the business of a particular founder. In the first wave, privatization funds founded by banks captured 35% of the market for the points that were allocated to PIFs. In the second wave, this amount was somewhat lower, but the funds created by banks were still able to take 24% of the market.

More than four hundred PIFs participated in the voucher scheme, and the most successful ones were connected with existing financial institutions. The 13 largest funds received more than 100 million voucher points each. These funds controlled over 56% of all points allocated to PIFs. The degree of concentration is shown in Table 1.3.

The results of the process of allocating voucher-points among the PIFs can be illustrated by the distribution of market share captured by the respective founding institutions of the PIFs. Figure 1.1 illustrates these results for the first wave of the voucher scheme. The largest PIF, created by the second largest bank (Česká Státní Spořitelna), captured almost one billion of the allocated points and thus captured 15.5% of the market. The second largest fund founder (První investiční) does not lag far behind with its 11.6% market share, which was divided amongst its 11 funds. The two strongest PIF founders accounted for more than 27% of the market for points allocated to PIFs in the first wave. Altogether the

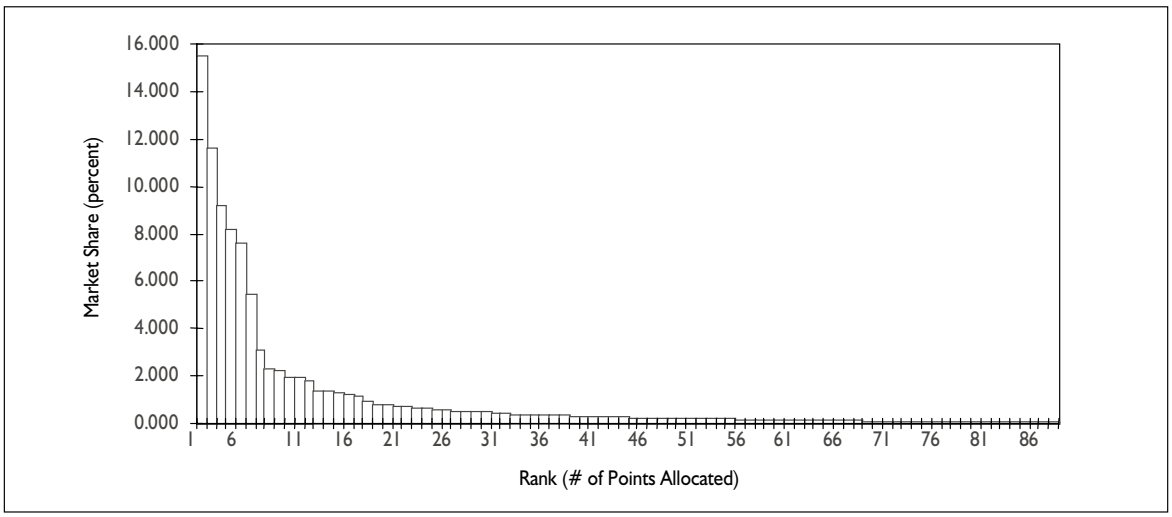
Table 1.3: Structure of PIFs according to size

Size of PIF in received points (million)	< 1.0	1 – 5	5 - 10	10 -50	50-100	> 100
Number of PIFs	191	122	43	59	6	13

[5] For additional overview see Coffee (1996) and Kotrba, Kocenda, and Hanousek (1999).

[6] Although these guarantees sound extravagant, they were in fact rather conservative. They were based on the artificial Kcs 1,000 registration cost for a voucher book. Since the book value of assets being sold averaged about Kcs 35,000 per coupon book, there was little risk in promising to redeem shares in PIFs for Kcs 10,000.

Figure 1.1: Wave 1 – Market share captured by founders of the largest PIFs



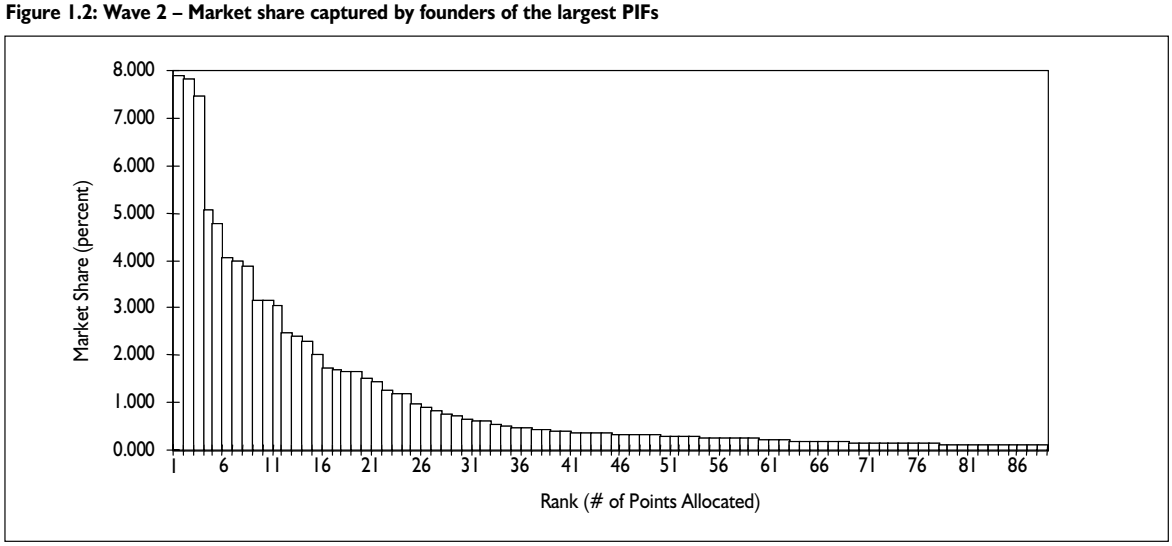
first five largest PIF founders captured more than half of the voucher scheme market during the first wave.

Whereas shares allocated in the first wave represented 212.5 billion crowns of the book value of Czech enterprises, the second wave sold off shares representing only about 146 billion. Moreover, 21.1 billion of this came from unsold shares from the first wave. On the other hand, the participation of citizens was higher than in the previous wave: in the first one, 5.83 million citizens registered their vouchers; in the second one, this number exceeded 6 million.

Figure 1.2 shows the distribution of market share captured by respective founding institutions of PIFs during the second wave of the voucher scheme. In this case, 10 founding institutions with their 48 funds were needed to capture more than half of the market. However, roughly half of this portion could be credited to the first three funds, which were very similar in their size (A-INVEST, Expandia, and Harvard). These three funds attracted around 300 billion points each. The combined number of points that were allocated to fund founders was, however, still less than that of the single leading founder from the first wave (Česká Státní Spořitelna), which formed one large PIF.

The domination of the market by a small number of fund managers in the first wave gave way to a rather strong leading tier, which was closely followed by a large group of fund managers of a relatively similar size. In other words, the market became more dispersed. Hanousek and Kroch (1998) argue that this is a result of the learning process citizens underwent during the first wave of voucher scheme (in particular, they became more adept at bidding) combined with improvement of the fund founders' marketing strategies, designed to attract the needed voucher points.

Figure 1.2: Wave 2 – Market share captured by founders of the largest PIFs



Voucher privatization in the Czech Republic was remarkably successful in allocating the shares of the targeted state enterprises quickly and efficiently. The bidding process was crude in many ways, especially in the administration of share prices and in the attempts by the privatization authority to artificially speed the process by overadjusting prices. But in spite of the artificial price jolts, the market reacted logically, even predictably[7]. In five or six short rounds over a few months almost all shares were allocated and almost all voucher points were spent. Individual investors, taking their cues from the mutual funds (to whom they attributed better information), tried to get the most value for their vouchers. But these individuals paid less attention to the PIFs in the second wave than in the first one, indicating growing investor self-confidence. The PIFs, guided by considerations other than short-term portfolio maximization, tried to acquire shares even at premium prices. This approach was undoubtedly aimed at attaining control over the assets, thus influencing the outcome for future ownership structure in favor of the PIFs.

The immediate post-privatization ownership structure of privatized companies can shed some light on the role of PIFs in the process. Of the 988 enterprises participating in the first wave, in 102 of them the single largest PIF owned 20% or more of the shares. The two largest funds owned 20% or more shares in 673 companies, and the four largest funds held 40% and more shares in about 400 companies. Lastovicka, Marcinčin, and Mejstřík (1995) report these results and also point out that foreign and domestic strategic investors held 20% or more of shares in 40 firms. Foreign owners alone had a 50% share position in 19 companies.

This tendency toward overwhelming fund dominance decreased somewhat after the second wave of voucher scheme, in which funds often sold shares acquired earlier, and individuals and corporate entities bought them. Such behavior does not necessarily mean a reduction in the dominant role of the funds. Rather, in relative terms, the concentration of ownership during the second wave was less apparent than in the first one. The desire of the funds to sell the shares in their possession could be explained by several factors. Funds tried to liquidate excess holding of shares in line with attempts to create well-diversified, risk-minimizing portfolios. Many of them, mostly small funds, ran out of liquidity and considered the sale of shares the only possible way to meet liquidity requirements.

Interesting points concerning the relationship between voucher prices and the emerging ownership structures were made by Claessens (1997). The prices of vouchers were determined by the actual supply and demand. It was found that voucher prices and secondary market prices depended upon the emerging ownership structures following the end of the voucher privatization; the more concentrated the ownership structure, the higher the prices. If a single domestic investor had a very large block of shares, the price of a voucher was even higher. This development had some links with the so-called "third wave" of privatization.

An important stage of ownership development during the early post-privatization period was nicknamed the "third wave of privatization". Here, heavy inter-fund trading rearranged the PIFs' portfolios[8]. This was carried out under almost complete lack of government intervention in the way of enforcement of legal provisions and regulations. During this stage many funds exceeded the 20% ceiling for shareholding in a single company. In addition, in 1996 several investment companies found a legal way of circumventing the 20% shareholding cap by transforming themselves into holding companies. Overall, the central features of the "third wave" are the increasing concentration of corporate ownership structures and the attempts of various investors to build up large financial conglomerates.

The privatization process brought companies out of state ownership; however, lack of regulation created an extremely soft management environment. As mentioned above, since 1995 investment funds have started to reorganize their portfolios, and more and more companies have undertaken the task of restructuring to become competitive. Hanousek and Kočenda (1998) argued that the presence of privatization funds in the ownership structure of a company is desirable up to a certain level of fund involvement as a source of funds for financing restructuring. However, too much proprietary involvement of a fund can have a negative influence on a company, because profits are extracted from the company rather than being used for investments and restructuring. Naturally, such behavior is indicative of weak corporate governance.

1.3. State Property as a Resource for Further Privatization

In exchange for vouchers, the PIFs acquired shares in numerous companies in which the state retained a share. Moreover, a number of these funds were themselves formed by financial institutions in which the state had kept a large share. Thus to a certain extent the funds involuntarily became institutional managers of the residual state prop-

[7] Hanousek and Filer (2001) showed that share prices adjusted on the basis of excess demand and rapidly incorporated all available information. With respect to PIFs this happened even when professional managers of these funds had a strong incentive to identify and use such information for their advantage.

[8] See Hashi (1998) for a detailed account.

Table 1.4: Direct ownership of the state

Categories of FNP shares	Number of enterprises	Total book value of enterprises (in millions of Czech crowns)
100%	28	16,578.6
75.1-99.9%	6	8,549.9
50.1%-75%	20	154,804.5
below 50%	315	260,147.9
Total	369	440,080.9

Source: Fund of National Property, 1998

erty. Such property, as will be shown in Part II, forms an important pool of equity that has the potential to substantially impact the evolution of the ownership structure among the voucher-privatized firms when it is finally sold by the state. For this reason, this phenomenon deserves to be investigated here.

Apart from the residual state property that is in reality managed by privatization funds, the state still maintains an important share in numerous joint stock companies. As a summary, Table 1.4 shows in a brief but highly illustrative way the share position of the state at the end of 1998, as reflected in its direct involvement in the FNP portfolio companies.

It is evident that the state still owns an enormous share of the economy through its ownership involvement in various companies. The numbers should be compared especially with the number of companies that entered voucher privatization as well as with the scope of privatization in general. From Table 1.2 we know that 1849 companies, with a book value of 367.5 billion crowns, entered both waves of voucher privatization. As we can see from Table 1.4 at the end of 1998 the state owned shares in 369 companies and this portion amounts to almost 177 billion crowns. The book value of these companies was about 440 billion crowns. The most valuable portion of assets falls into the category of 20 companies where the state holds a share of between one half and three quarters. Most of these 20 companies are considered strategic, and they account for more than a third of the total book value of the companies in question.

The influence of the state is exercised by various means. The simplest is the number of shares or the percentage of total voting rights in a given company. Another is the "golden" share. This instrument – a single share with a special status – allows the state to veto any major changes in a company in which it holds such a share. Utility companies are a typical example of companies in which the state holds a golden share. Many other companies have been declared strategic and enjoy a special status that is embedded in related legal provisions.

At the end of 1998, as Kočenda (1999) points out, the companies in which the state kept more than fifty percent of the shares represented only a relatively small number of all firms (15%). However, if one takes into account the book value of each firm as a measure of the economic power of the companies and consequently the extent of wealth that is controlled by the state through its shares, the picture changes. When the *relative book value* of enterprises in each category is considered, it seriously undermines the former observation about the small influence of the state[9].

The relative book value of all companies in which the FNP has a share of over 50% represents a spectacular 41% of all assets in the state portfolio. If we take into account additional means of control (golden share, strategic company status), then state control reaches 76% of the book value of all companies in the portfolio of the FNP. One cannot but conclude that the state maintained its influence over a significant part of the Czech economy in spite of the voucher privatization.

The privatization program in the Czech Republic was carried out under different schemes and resulted in different degrees of residual state property. Additionally, the state explicitly excluded a certain amount of assets from privatization. Thus, the residual state property in the economy is partly the result of the inefficiency of the privatization process and partly the intentional outcome of the refusal to carry out further privatization.

While privatization of state-owned enterprises has been one of the most important aspects of economic transition from a centrally planned to a market system, no transition economy has privatized all its firms simultaneously. This raises the issue of whether governments privatize firms in a strategic manner. Gupta, Ham, and Svejnar (2000) examine theoretically and empirically the determinants of the sequencing of privatization. They characterize government objectives as (i) increasing economic efficiency, (ii) maximizing sales revenue from privatization or public goodwill from transferring shares of firms to voters, and (iii) reducing political costs due to layoffs. Next, they use an enterprise-level data set from the Czech Republic to test the competing theoretical predictions about which firm characteristics affect the sequencing of privatization. They find strong evidence that more profitable firms were sold first. This suggests that

[9] The relative book value is the product of the portion of shares held (in percentages) multiplied by total book value.

the government sequenced the sale of firms in a way that is consistent with theories of sale revenue maximization and/or maximizing public goodwill from subsidized share transfers to citizens.

Despite this privatization sequencing, the large-scale privatization process was – as discussed above – incomplete. In the years following the formal end of the voucher privatization, the government did not make many initiatives for further privatization. Thus, the state has kept massive shares in the already voucher-privatized companies. The political crisis at the end of 1997 resulted in the dissolution of the government by the president, who appointed a new government to consolidate state affairs. Selection of the cabinet was made on the basis of professional merits rather than political affiliation. This government received a time-limited mandate until the elections that were held in July 1998. The government began preparations for further privatization and prioritized the privatization of the state holdings in the so-called strategic companies. A privatization schedule was set. The 38 companies were divided into three categories that corresponded to the time phase of their privatization.

The first category contained companies selected to be privatized immediately. Here, the strategic investors were to be selected exclusively via public auction. Firms in the mining industry dominated this category. The second category contained companies that were to be prepared for privatization according to procedures that would be clarified later. Three of the four largest banks belonged to this cohort, and steps towards their privatization were taken. Companies in the third category were subject to further objectives of the government which were not clearly specified.

General elections held in July 1998 were won by the Social Democratic Party, which formed a minority government after lengthy deliberation and signed the so-called "opposition agreement" with its political competitor, the Civic Democratic Party, to avoid eventual clashes of power. The political change also brought a different perspective towards the blueprint of residual state property privatization. The worsening economic situation put high pressure on the state budget. In order to keep this budget more or less balanced, the government decided to speed up privatization of some companies to acquire extra revenue for the budget.

The government only approved a privatization framework, without providing details concerning the privatization of various strategic companies. This new privatization timetable delayed the privatization of strategic companies by one to three years in comparison with the previous interim government's timetable. The banks were the only exception: the government declared its intention to privatize them as quickly as possible. This strategy was criticized as not providing for sufficient coordination of the privatization of banks and industry, which could be dangerous due to the fact that many of the strategic manufacturing companies are heavily indebted to the strategic banks.

The privatization of the commercial banking sector is currently well advanced. The state's stake in the first of the large banks, the Investment and Post Bank (Investiční a poštovní banka, IPB), was sold to a strategic foreign investor, the Nomura Europe PLC, in early 1998. In 1999 another bank belonging to the so-called "Big Four" was privatized when the state's stake in Czechoslovak Commercial Bank (Československa Obchodni Banka, ČSOB) was sold to the Belgian KBC Bank. The year 2000 marked the sale of the second largest bank, the Czech Savings Bank (Česka Spořitelna, ČS), to the Austrian Erste Bank. The last and largest bank in the country, the Commercial Bank (Komerční Banka, KB), is scheduled to follow suit in the imminent future, but no details have been revealed so far. In June 2000 dramatic losses resulted in the replacement of the management of the Investment and Post Bank (IPB). The bank was subsequently re-sold to the Czechoslovak Commercial Bank (ČSOB), owned by the Belgian KBC Bank.

Banks are, by nature, financial intermediaries, and therefore their quality is of indispensable importance for the whole economy. Despite the fact that foreign investors add additional liquidity to banks, the share of classified loans in the banks is still high and is not going to diminish until their borrowers in the corporate sector improve their economic and financial health. Nevertheless, the privatization of banks has been one of the most positive achievements during the transition process so far.

As a result of the government privatization strategy, further privatization in the energy sector was substantially slowed down. Sales of energy distribution networks are planned to take place from 2000 to 2002. However, decisions regarding the direction of the privatization of the monopoly electricity producer (CEZ) are to be delayed until 2002. According to arguments in Kočenda and Cabelka (1999), this approach might result in undesirable consequences.

As for the privatization of the natural gas processing and distributing companies, the government intends to take back various portions of shares to restore the state's majority in these companies. Eventual sales would then be effected from a majority owner position. Relatively quick sales are expected in the cases of a major oil processing company and two coal mining companies where the state still holds an absolute majority.

1.4. Privatized Firms: First Assessment of Ownership Structure and Performance

The assumption behind privatization in many parts of the world is that private ownership improves corporate performance. The empirical evidence for this assumption comes from two kinds of studies. The first compares the pre- and

post-privatization financial and operating performance (see D'Souza and Megginson, 1999, among others). They compare the pre- and post-privatization financial and operating performance of firms in 28 industrialized countries that were privatized through public share offerings during the period from 1990 to 1996. They document significant increases in profitability, output, operating efficiency, and dividend payments, and significant decreases in leverage ratios of firms after privatization. These findings strongly suggest that privatization yields significant performance improvements.

The second strand focuses on comparing the performance of state firms with either private (Boardman and Vining, 1989) or privatized (Pohl, Anderson, Claessens, and Djankov, 1997) firms operating under reasonably similar conditions. Additional evidence has been obtained recently by a number of studies of the post-Communist transition economies which, because of the presence of large numbers of both state and privatized firms, have become a favorable testing ground for the general claim that privatization is effective (see for example Frydman, Gray, Hessel and Rapaczynski, 1997, or Dharwadkar and Brandes, 2000).

Privatization, and especially the large-scale privatization, brought an entirely new set of ownership arrangements into the Czech economy. This was reflected by enterprise performance. Despite some positive effects of mass privatization, critics of this method of transfer of ownership from the state to private investors such as Claessens and Djankov (1999b) found that the more concentrated the ownership, the higher the firm profitability and labor productivity[10]. This empirical fact raises the important question of whether it is better to distribute the shares of firms to a large number of individuals (as in the voucher method) or to a small number of individuals (e.g. through direct sales).

Bornstein (1999) goes even further and proposes an alternative to privatization – the commercialization of state-owned enterprises. Another proposed alternative is the sales of shares on the capital market. Toporowski (1998) points out that the lack of private financial accumulation under Communism has constrained the use of privatization through capital markets. Another alternative is privatization through foreign direct investment, which creates a stronger financial structure. This structure, however, creates an industrial structure that is more vulnerable to adverse international circumstances.

The ultimate goal of privatization is to restore the missing links among firms and to create an effective economic system. But the privatization process, represented by distribution of the enterprises to individuals, cannot itself restore the health of the economic system. It must be accompanied by factors external to the enterprise, such as a legal framework, appropriate regulations and well-functioning capital and product markets.

The overall impact of privatization is – in spite of expectations – not always positive. There are many empirical studies about the impact of different types of privatization on enterprise performance. Havrylyshyn and McGettigan (1999) review literature on this topic. In order to evaluate the impact of privatization Frydman, Gray, Hessel, and Rapaczynski (1999) compare the performance of privatized and state firms in the transition economies of Central Europe, while controlling for various forms of selection bias. They argue that privatization has different effects depending on the types of owners to whom it gives control. In particular, privatization to outsider (but not insider) owners has significant performance effects. Where privatization is effective, the effect on revenue performance is very pronounced, but there is no comparable effect on cost reduction. Overlooking the strong revenue effect of privatization to outside owners leads to a substantial overstatement of potential employment losses resulting from post-privatization restructuring.

Investigating the relation of profit and privatization, Claessens and Djankov (1999a) found that profitability and labor productivity are both positively related to appointments of new managers, especially those appointed by private owners. Equity holdings of general managers have a small positive effect on corporate performance. The main conclusion is that enterprise restructuring in transition countries requires new human capital, which can best occur through management changes.

A specific feature of the large privatization in the Czech Republic is the collective investment opportunities offered by numerous privatization funds at the onset of the voucher privatization scheme. This scheme resulted in the distribution of enterprise shares not amongst a large number of individuals, but amongst a large number of privatization investment funds. Specifically, one third of the investment companies gained control of over two thirds of the total enterprise shares obtained by all funds. The lax legal environment and the absence of any notification and disclosure requirements facilitated a wave of mergers and acquisitions, which contributed to further concentration of ownership. These mergers and acquisitions created an extensive web of relationships.

Hashi (1998) raised concerns about a financial oligarchy controlling a considerable part of the economy and exercising undue influence over the market structure. Under severe pressure from the public, the press and the opposition parties, the government speeded up legislation establishing the Securities Exchange Commission. At the same time the Czech National Bank has prepared new draft laws on the banking system which will introduce new restrictions on the ownership of banks and on the structure of their portfolio investment. The government has also prepared the Law on Investment Companies and Investment Funds, aiming to

[10] This conclusion was made although the coefficient on profitability was found to be insignificant.

reduce the maximum limit on a given fund's share in a given company from 20% to 11% and, more importantly, preventing the representatives of investment funds from sitting on company boards. Although these changes to the regulatory framework may solve some of the problems of the existing system, they are also likely to affect the system of corporate governance adversely.

A 1998 OECD report sums up this post-privatization situation when it states that the Czech voucher approach to privatization produced ownership structures that "…impeded efficient corporate governance and restructuring"[11]. The essence of the problem was that insufficiently regulated privatization investment funds ended up owning large or controlling stakes in many firms privatized by vouchers, as citizens diversified risk by investing their coupon points into these funds. But most of the large funds were owned by the major domestic banks in which the Czech state retained a controlling or even majority stake.

Nellis (1999) critically argues that the following outcomes were predictable:

- Investment funds tended not to punish poor performance of firms, since pulling the plug would force the funds' bank owners to write down the resources lent to these firms.
- The state-influenced, weakly managed and inexperienced banks tended to extend credit to high-risk, low-potential privatized firms (whether or not they were owned by subsidiary funds) and persistently roll over credits rather than push firms into bankruptcy.
- The bankruptcy framework itself was weak and the process lengthy, further diminishing financial market discipline.
- The lack of prudential regulation and enforcement mechanisms in the capital markets opened the door to a variety of highly dubious and some overtly illegal actions that enriched fund managers at the expense of minority shareholders, and harmed the health of the firm; for example, by allowing fund managers to load the firm with debt, then lift the cash and vanish, leaving the firm saddled with debts it had not used for restructuring.

Many conclude, for these reasons, that Czech firms privatized through vouchers, in which investment funds hold the controlling stakes, have not been sufficiently or consistently restructured. Weiss and Nikitin (1998) looked at financial performance in a set of Czech firms and concluded that while "ownership concentration in hands other than funds has a major (and positive) effect on performance," there is "no evidence of a positive effect of ownership shares by funds on the performance of operating companies." Mertlik (1997) argued along these lines as well.

The proximate and most visible reasons of inadequate restructuring are weaknesses in capital and financial markets. On the other hand, the reason of failures in the voucher privatization method is the method itself, with its emphasis on speed, its postponement of consideration of the legal and institutional framework aspects, and its atomization of ownership.

1.5. Initial Conditions of Ownership Concentration and Initial Post-Privatization Assessment

To conclude this chapter we provide a basic picture describing the main points in ownership evolution during large privatization, at its end, and the trend during the following years.

The two waves of the voucher privatization took place from 1991 to 1994. The early post-privatization period following the end of voucher privatization, in the years 1994 and 1995, was when the post-privatization ownership structure in Czech companies took shape. During the so-called "third wave" of privatization, which took place mostly during 1995 and continued into 1996, changes in the ownership structure of companies were happening very frequently and extremely rapidly. Investors, including the PIFs, were reshaping their initial immediate post-privatization portfolios of acquired companies. This was done with two purposes on mind: first, to optimally diversify their portfolios, and second, to concentrate their ownership in specific firms and industries.

The process was quite chaotic and highly unregulated by legal provisions. Frequently investors, and especially PIFs, simply engaged in direct swaps of shares. Direct, off-market, share trading was also very common. Less frequently, an exchange of shares was carried out through a sell-buy operation on the market. The process was extremely dynamic and often legally questionable.

An account of the overall evolution of ownership during the years from 1993, when the first wave was concluded, to 1999 is presented here as a background for further detailed analysis. The ownership data set of Czech firms listed on the Prague Stock Exchange (PSE) for the years 1993–1999 was compiled from the commercial database Aspekt. Due to the limitations in the original data-source, there is no single firm for which we have ownership data for all seven consecutive years. Thus, the following account covers all firms for which data on the ownership structure were available. The description does not deal exclusively with firms privatized in the voucher scheme, but attempts to provide a sketch of trends in

[11] For more details see report of the OECD, Czech Republic (Paris: OECD, 1998).

Table 1.5: Evolution of mean values of three ownership concentration indices

Year	No. of Observations	Mean C1	Mean C5	Mean H
1993	2,357	55.88	94.02	0.52
1994	3,146	58.16	94.72	0.54
1995	3,635	60.07	95.36	0.56
1996	1,966	42.04	60.53	0.27
1997	2,024	46.54	64.89	0.32
1998	1,566	48.17	65.16	0.32
1999	897	51.60	67.22	0.36

Source: Aspekt
Note: C1 represents the average percentage of the equity owned by the single largest investor and C5 that held by the five largest investors. H stands for the Herfindahl index of ownership concentration.

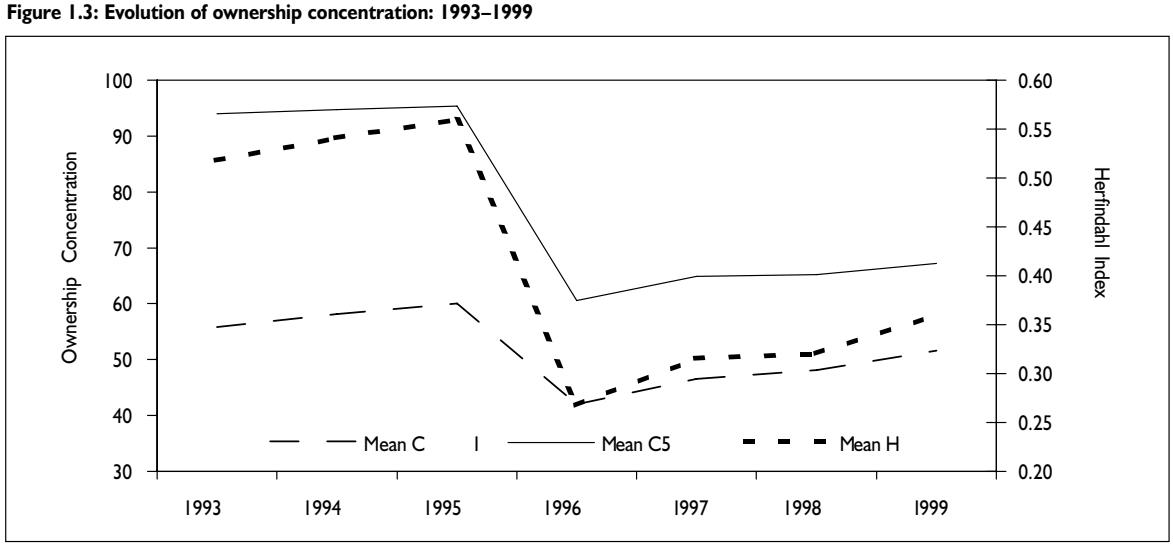
ownership concentration for a relatively large representative sample of Czech firms.

Despite this limitation we can get a fairly good notion about the primary changes in ownership structure by using the following ownership concentration measures: the average percentage of the equity owned by the single largest owner (C1), the average percentage of the equity owned by five largest owners (C5), and the Herfindahl Index of ownership concentration (H). The Herfindahl Index is calculated as the sum of the squared shares of each owner[12]. Table 1.5 below presents the evolution of mean values of three different ownership concentration indices[13].

Figure 1.3 depicts the evolution of the means of C1, C5 and the Herfindahl index during the 1993–1999 period. It clearly shows an initial increase in ownership concentration, followed by a drop in concentration from 1995 to 1996. This is even more accentuated in the evolution of C5. This index dropped from 94 percent to 67 percent. Moreover, the Herfindahl index, which is more sensitive to the ownership concentration, fell from 0.52 to 0.36. Such a picture is in line with the picture of the "third wave" of privatization presented above.

After 1996 the concentration started to increase again, although at a slower pace, as it commenced to reflect economic reasons of owners for the future development of firms. It is to these issues – the more economically motivated changes in ownership structure and resulting effects on firms' performance – that we turn in the next chapter.

Figure 1.3: Evolution of ownership concentration: 1993–1999



Source: Aspekt
Note: C1 represents the average percentage of the equity owned by the single largest investor and C5 that held by the five largest investors. H stands for the Herfindahl index of ownership concentration.

[12] The Herfindahl - Hirschman index was developed independently by Hirschman (1945) and Herfindahl (1950). This index is calculated by squaring the shares of all owners of particular firm and then summing the squares.

[13] In the literature, a higher concentration index for the ten largest owners (C10) is sometime calculated. Since C5 reaches quite high values in our case, we omitted the C10 index since it would not provide any additional insight.

Part II.
Changes in Ownership Structure and Performance in Voucher-privatized Firms

Part I set the necessary framework for an analysis of changes in ownership structure and their effect on firms' economic performance. This chapter deals exactly with these issues.

2.1. Post-Privatization Ownership Outcomes: 1996–1997

The years 1991–1995 were marked by the ongoing process of voucher privatization. The ownership structure resulting after both waves was more or less an outcome of the logistic procedure of how the voucher scheme was administered. In 1995 changes in ownership reflected also legal requirements to prevent excessive stakes being held by privatization funds.

More economically meaningful patterns of ownership structure began to emerge in Czech companies in 1996. This is the year when we begin an analysis of the post-privatization changes in ownership structure. In order to understand the changes in ownership structure in greater detail, we use, as a complementary source, a different data set than the one introduced at the end of the Part I. This data set is richer than the one mentioned above, but covers only two years, 1996 and1997. As a first step, various summary statistics for the initial post-privatization period (1996–1997) are presented in the ensuing tables. The data were compiled from the sources of the Czech Statistical Office and the Czech Capital Agency. To avoid a selection bias, firms with 100 percent ownership by a single individual were excluded, because they represent only small firms with very low capitalization. Therefore, the maximum ownership position in the category of individual owners lies below 100 percent in every particular firm. Further, firms with less than 20 employees were excluded. The working sample consists of the companies that were privatized within the voucher privatization scheme. The sample for the year 1996 contains 1155 Czech companies, while that of 1997 contains 853 companies. The firms represent a wide range of industries. The largest group of firms belongs to the service and mechanical engineering industries and the smallest to the mining, glass and ceramics industries.

Table 2.1 presents summary statistics of C1, C5 and the Herfindahl index, measures of ownership concentration introduced at the end of Part I. It is evident, in comparison to many developed economies, that ownership concentration is extremely high. The average single owner (C1) held close to 39% of shares in a company in 1996 and more than 42% in 1997. The five largest owners (C5) held almost 58 and 62 percent of shares in these years respectively. These findings suggest that ownership concentration increased between 1996 and 1997. This is also confirmed by the comparable rise of the Herfindahl index (H) during the period.

To show the decomposition of the above statistics by specific groups of owners, further evidence is provided in Tables 2.2-2.3 Here we show the respective shares held by nine categories of owners:

1. The State (represented specifically by the Fund of National Property);

Table 2.1: Ownership concentration measures: 1996–1997

Year	1996			1997		
Ownership Concentration Measure	C1	C5	H	C1	C5	H
Mean	38.84	57.64	0.22	42.62	61.90	0.25
Median	37.39	59.71	0.18	43.16	64.26	0.23
Min	5.82	10.25	0.00	8.97	10.00	0.01
Max	96.56	97.78	0.93	97.63	97.95	0.95

Note: C1 represents the average percentage of the equity owned by the single largest investor and C5 that held by the five largest investors. H stands for the Herfindahl index of ownership concentration.

Table 2.2: Ownership structure: privatized companies in 1996

Category of Owner	No. of firms	Mean *	Median	Min	Max
State	279	30.02	24.98	0	89.55
Privatization Investment Funds	566	30.59	25.00	0	90.77
Banks	85	25.25	16.83	0	91.71
Bank-sponsored PIFs	194	23.96	19.34	0	86.87
Non-bank-sponsored PIFs	449	28.24	20.72	0	82.35
Portfolio Companies	140	28.59	22.05	0	85.64
Individuals	204	36.05	35.99	0	92.27
Domestic Strategic Investors	627	43.05	45.04	0	96.56
Foreign Strategic Investors	142	41.50	39.82	0	95.56

* The Mean Ownership Position is calculated based only on those firms in which a particular group of owners is present.

2. Privatization Investment Funds;
3. Banks;
4. Bank-sponsored PIFs (this category allows us to show the extent to which the banks hold ownership positions in firms indirectly through such funds);
5. Non-bank-sponsored PIFs (some overlaps between the two PIF sub-categories occur);
6. Portfolio Companies (a category of owners whose strategy is solely to realize profits through dividend payments or, more frequently, through capital gains and who normally do not have ambitions to participate in corporate governance);
7. Individuals (this category includes both private individuals and non-financial corporate entities);
8. Domestic strategic investors, and
9. Foreign strategic investors.

Table 2.2 sketches the picture of the ownership structure in voucher-privatized companies in 1996 with respect to the nine owner categories defined above. The sample of Czech firms allowed us to calculate the mean ownership position for each category. This mean is the arithmetic average of all shares of owners belonging to a particular group of owners, calculated only for those firms in which this group appears. So, for example, the mean ownership position for the bank category is 25.25%, meaning that the average share of banks in the firms in which banks have shares is 25.25%. Similarly, the mean ownership position of the State is 30.02%.

The table also shows that there are 566 companies in which investment funds have a share. This means that the investment funds are to a certain degree involved in almost half of the sample of Czech voucher-privatized enterprises. Moreover, the average holding is over 30% and exceeds 90% in some firms. Banks were the group appearing least frequently; only 85 companies have banks as direct shareholders. However, we observe the additional influence of banks in almost 200 firms in which banks have an average share of 24%.

The most frequently represented group of owners is that of domestic strategic investors, who were involved in 627 companies, with the mean holding slightly over 43%. Foreign strategic investors held stakes in 142 companies, with an average stake of almost 42%. Similarly, we can derive the ownership positions for the other types of owners.

The fact that the median of foreigners' shares is lower than its mean tells us that foreigners tended to hold higher stakes than domestic strategic investors. The same holds for investment funds as well. Strategic investors, domestic and foreign, have a high mean ownership position compared to all other categories. The reason is simple: a strategic investor's condition for entering into a business is acquisition of control of the company, so the share he acquires has to be a large one. Indeed, the average position exceeds 40%.

The rather low number of firms with foreign strategic investors in 1996 compared to other owner categories is surprising. However, at the end of the 1990s, the Czech Republic faced an accelerated inflow of Foreign Direct Investments, and this suggests an increase in the number of foreign-owned firms. Moreover, due to the changes in portfolio structures, we can expect an increase in the average ownership position. This trend of concentration of ownership is rather general and is valid for all owner categories.

Table 2.3 presents the statistics on ownership structure in 1997. We can compare it with Table 2.2 to see how the situation evolved in comparison with the previous year. However, it would be premature to draw any conclusions about a pattern yet. Due to the lack of data the absolute numbers of firms for each owner category are lower in 1997 than in 1996, but comparable in proportions to the sample as a whole. Therefore, the main conclusions should be drawn from comparing other available statistics.

In 1997 the highest ownership concentration was recorded for both domestic and foreign strategic investors. Moreover, the ownership concentration increased between 1996 and 1997 for both owner categories. This suggests a more active – and probably more successful – role of the two groups of investors in restructuring companies and running

Table 2.3: Ownership structure: privatized companies in 1997

Category of Owner	No. of firms	Mean *	Median	Min	Max
State	148	34.84	33.95	0	89.55
Privatization Investment Funds	348	34.18	30.75	0	84.21
Banks	39	22.45	13.84	0	91.79
Bank-sponsored PIFs	117	26.07	19.91	0	82.07
Non-bank-sponsored PIFs	276	32.05	25.79	0	82.99
Portfolio Companies	56	24.66	20.16	0	64.45
Individuals	166	34.72	30.26	0	82.72
Domestic Strategic Investors	565	47.97	49.64	0	97.63
Foreign Strategic Investors	126	43.92	39.95	0	97.63

* The Mean Ownership Position is calculated based only on those firms in which a particular group of owners is present.

them in a profitable manner. In the case of individual investors one should expect a similar advance. However, this category saw a slight decrease (about 1 percentage point) in the average ownership concentration. Still, such a high ownership concentration for this category of investors suggests their potentially active role in corporate control and the monitoring of firms.

Remarkably, the share ownership of the state is also very high and is mostly concentrated in the strategic industries as energy, banking, and utilities. This is entirely in line with the previous discussion regarding residual state property (see Section 1.3). The state held stakes in about 25% of all companies in the sample, and in those companies the average state share is almost 35%, which is an increase in ownership concentration of about 5% in comparison with 1996. We suspect that while the state was selling off ownership positions in some companies, in the remaining ones it had a tendency to preserve, and even strengthen, its dominant ownership position. The residual state property directly (or indirectly) owned and controlled by the state through the FNP is a large pool of equity which, when it changes hands, has significant potential to affect ownership structures. One can expect that during the next few years the number of firms with state involvement will decrease, while the number of foreign-owned firms will increase. On the other hand, as in the case of foreign-owned firms, the mean share of the state is likely to be increasing.

Another large and important group of owners is that of the investment funds. Overall, this category saw an increase in ownership concentration between 1996 and 1997 of about 3.5 percentage points. When this category is subdivided, the increase is apparent for both categories, bank-sponsored and non-bank-sponsored funds. A greater change in concentration is visible in case of the latter subcategory. This finding is in line with the decrease in ownership concentration in the category of banks by roughly 3 percentage points. Another decrease in concentration (by about 4 percentage points) occurred in the category of portfolio companies. The two latter categories had the lowest average ownership concentration among all groups of owners, a finding that should be expected due to the primary line of business these types of owners conduct.

To summarize, we can say that between 1996 and 1997 the ownership concentration in a sample of the voucher-privatized companies generally increased. The highest concentration was found among the local and foreign strategic investors, the lowest among banks and portfolio investment companies. The largest increase in ownership concentration was recorded for the category of state ownership and domestic strategic investors, followed by investment funds and non-bank-sponsored PIFs in particular.

2.2. Evolution of Ownership Structures within the Post-Privatization Environment

In the previous section we provided a comparative description of the initial state of ownership concentration immediately after the end of voucher scheme. Now we concentrate on analyzing a broad scope of issues associated with the evolution of ownership structures after 1995, when the voucher privatization scheme was officially concluded. Since our goal is to examine the changes in the ownership structure of firms involved in the voucher privatization, we focus our attention on these firms and supply some comparison with firms that did not fall under the scheme.

2.2.1. Ownership Concentration and Structure

Using only the mean of ownership concentration for any conclusions about changes in ownership structure would be simplistic, and we could lose a lot of interesting information. Thus, as an additional tool for our analysis, we use density functions of ownership concentration indices to paint a broader picture of ownership structure and its changes during the period from 1996 to 1999.

Table 2.4: Ownership concentration, measured by C1 index: voucher privatized firms

Concentration Index (Year)	Number of Observations	Mean	Stand. Deviation
C1 (1996)	645	38.91	19.28
C1 (1997)	645	42.80	20.38
C1 (1998)	645	48.62	21.51
C1 (1999)	645	51.82	21.79

Table 2.5: Ownership concentration measured by C5 index: voucher privatized firms

Concentration Index (Year)	Number of Observations	Mean	Stand. Deviation
C5 (1996)	645	57.40	19.90
C5 (1997)	645	61.29	19.95
C5 (1998)	645	67.04	19.44
C5 (1999)	645	69.17	19.10

Table 2.6: Ownership concentration measured by Herfindahl (H) index: voucher privatized firms

Concentration Index (Year)	Number of Observations	Mean	Stand. Deviation
H (1996)	645	0.22	0.16
H (1997)	645	0.26	0.18
H (1998)	645	0.32	0.21
H (1999)	645	0.35	0.22

Further, in order to obtain reliable results we reduce a sample of firms to those for which we have overlapping ownership data for the years 1996–1999. The data sample then contains 750 firms, of which 645 were privatized under the voucher scheme and 105 were not. The voucher-privatized firms were involved in the first, second, or both waves of the voucher privatization. The sample thus contains yearly ownership data for 40% of the firms that were privatized within the voucher scheme.

Figure 2.1 presents plots of densities of concentration indices C1 (single largest owner), C5 (five largest owners) and H (Herfindahl index) for 645 firms involved in voucher privatization. Each different line represents a different year. All plots are the non-parametric densities, using the Epanechnikov kernel (Epanechnikov, 1969). Ownership concentration measured by C1 resembles a bimodal distribution since it exhibits two prominent regions where concentration occurs.

In 1996 a high percentage of firms falls in the left region (0 to 35%), and their proportion gradually decreases thereafter. In particular, the number of firms with C1 in the interval <0%,35%> decreased from 317 in 1996 to 151 in 1999. The second region is concentrated in the area of 50%. The number of firms around this second hump has slightly increased during the four-year period. In general, from Figure 2.1 we see that in 1996 the density of C1 more or less resembled a bimodal distribution, but over the four-year period it has moved in the direction of a normal distribution. Overall, the mean value of C1 in our sample increased from 38.9% to 52%, as documented in Table 2.4.

Figure 2.1 also shows that the density function of the C5 index has gradually shifted to the right, indicating the clear increase in ownership concentration of the five largest shareholders. Table 2.5 complements the above figure as it shows how the mean value of the C5 index increased from 57.4% in 1996 to 69.2% in 1999.

Both sets of previous findings are fully confirmed by the evolution of the Herfindahl (H) index that serves as an alternative measure of ownership concentration with respect to the C1 and C5 indices. The density of the H index has become flatter, and Table 2.6 shows that its mean value has increased from 0.22 in 1996 to 0.35 in 1999.

In our sample of 645 firms involved in voucher privatization, there were 433 firms that were privatized during the first wave, 91 firms privatized during the second wave, and 121 firms that were privatized gradually during both waves. In order to distinguish any possible characteristics that might be specific to either the first or second wave of voucher privatization we computed similar sets of statistics, as well as densities, for the three sub-samples of firms. However, we found any specific characteristics to be insignificant, and we do not report them. Based on this result we do not distinguish in our further analysis whether a given firm was involved in the first, second, or both waves of voucher pri-

vatization. The decisive parameter remains whether or not a firm was involved in voucher privatization.

Following our previous results we investigate whether there are any similarities in the density functions of concentration indices and their evolution over time between voucher privatized firms and those that were not involved in voucher scheme. Figure 2.2 presents density functions of ownership concentration indices of firms that were not involved in voucher privatization (105 firms).

The density functions differ from those presented in Figure 2.1. The shape of the C1 density is similar to the density of the student *t*-distribution. It is important to note that it has no bimodal shape, in contrast to voucher-privatized firms. All three plots of concentration indices suggest that the most pronounced change occurred in 1998. In other years the changes were rather limited. Moreover, the density function of C5 becomes flatter and flatter each year, and in 1999 the index C5 is roughly uniformly distributed over the interval (0,100). This is in sharp contrast with the skewed density of the C5 in the case of the voucher-privatized firms.

As in the case of voucher-privatized firms, Tables 2.7-2.8 complement the results presented in Figure 2.2 for the firms that did not belong to the voucher scheme part of the sample. The tables show that ownership concentration increased over four years, albeit not to the same extent as in the voucher scheme group. The mean value of the C1 index has only increased from 32.85% in 1996 to 37.96% in 1999, and that of the C5 index from 39.67% to 50.32% respectively.

Although both samples of firms (those involved in voucher privatization and those that were not) are different in size, we can see that voucher-privatized firms have persistently higher means of ownership concentration. Further, voucher privatized firms were subject to more pronounced – and less regular – changes in ownership concentration.

2.2.2. Ownership Clusters over Time: 1996–1999

Based on the results documented in Figure 2.1 and Tables 2.4-2.6, the following important conclusion emerges. Voucher-privatized firms experienced the largest change in ownership concentration within the part of the sample made up of firms in which the single largest investor held a stake of 15 to 35%.

Plots of the density functions of C1 indices (Figure 2.1) show that concentration indices were clustered within certain intervals. In the next part of our analysis, we will describe the definition, though intuitive, of three such clusters. Then we will study how firms, or rather their C1 indices, move across these clusters. Such an approach will allow us to broaden the picture of changes in ownership structure and concentration.

As was noted, the largest change in ownership concentration occurred among firms whose value of C1 was in the interval of <0%,35%>. From Figure 2.1 (see Appendix) we see that the densities of the value of C1 for respective years reach their "local" minimum between 30 and 40%, with an average of 34.2%. Thus, we set the upper boundary of the first cluster at 35%. The lower boundary was set at zero. Setting the lower boundary at a point different from zero (say 5 or 10%) would have no significant influence on our conclusion; on the other hand, with a lower boundary of zero we are able to cover the whole distribution range. Using a similar argument based on the existence of another local minimum allows us to set the upper boundary of the second cluster at 63% percent. The third upper boundary lies at 100% by definition. The C1 indices are thus divided into three clusters for each year. The first cluster contains firms whose C1 value is in the interval of <0%,35%>, the second cluster contains firms whose C1 value lies in the interval <35%,63%>, and the third, last, cluster contains the remaining firms, with their C1 in the interval <63%,100%>.

Table 2.7: Ownership concentration measured by C1 index: firms not in voucher scheme

Concentration Index (Year)	Number of Observations	Mean	Stand. Deviation
C1 (1996)	105	32.85	22.16
C1 (1997)	105	32.57	21.53
C1 (1998)	105	36.44	22.15
C1 (1999)	105	37.96	22.15

Table 2.8: Ownership concentration measured by C5 index: firms not in voucher scheme

Concentration Index (Year)	Number of Observations	Mean	Stand. Deviation
C5 (1996)	105	39.67	24.84
C5 (1997)	105	42.73	25.33
C5 (1998)	105	47.74	24.76
C5 (1999)	105	50.32	27.05

Now we will study in detail how firms are moving across these clusters. Tables 2.9-2.11 present changes in clusters between two consecutive years. We can see that each year we observe more or less the same patterns. Roughly 70% (72, 66, 74) of the firms whose C1 value was in the first cluster in the first year remained in the same cluster in the following year. In about 22% (22, 25, 19) of the firms, the C1 value increased and in the next year they moved to the second cluster. The remaining firms originally in first cluster (6, 9, 8) moved to the third cluster. Moreover, it is clear that firms in higher clusters have a strong tendency to remain in them. In other words, only 70 percent of the firms from the first cluster remained in the same cluster, but almost 90 percent of the firms in the third cluster remained there.

Table 2.9: C1 concentration clusters: 1996–1997

		Cluster in 1997		
		1	2	3
Cluster in 1996	1	72%	22%	6%
	2	13%	70%	17%
	3	5%	8%	87%

Table 2.10: C1 concentration clusters: 1997–1998

		Cluster in 1998		
		1	2	3
Cluster in 1997	1	66%	25%	9%
	2	6%	77%	18%
	3	1%	9%	90%

Table 2.11: C1 concentration clusters: 1998–1999

		Cluster in 1999		
		1	2	3
Cluster in 1998	1	74%	19%	8%
	2	4%	84%	12%
	3	1%	5%	94%

The evolutionary process described above can be viewed as the transition from one cluster to another. The exact calculations of transition probabilities from one year to another are calculated and presented in Table 2.12. When we multiply this transition matrix by itself we get the change in the number of firms belonging to a particular cluster after three consecutive years (two transitions). If we wish to calculate the overall change (from year 1996 to 1999) in the number of firms belonging to a particular cluster, we would multiply the transition probability matrix by itself twice (T*T*T). Such an operation would yield a prediction of changes in clusters that would, in fact, not be critically far from the actual empirical findings (these are presented in Table 2.13).

Table 2.12: Transition probabilities among three clusters

		Cluster in current year		
		1	2	3
Cluster in previous year	1	69.4%	23.9%	6.7%
	2	8.7%	74.9%	16.3%
	3	1.4%	7.9%	90.6%

The overall change in clusters during the years 1996–1999 is presented in Table 2.13. We can see that only 40% of firms which belong to the first cluster in 1996 remained in this cluster in 1999. 39% of the firms in that cluster in 1996 moved to the second cluster by 1999, and the remaining 21% ended in the third cluster. 53% of all firms whose C1 value was in the interval <35%,63%> in 1996 remained in this cluster, 37% percent of them moved to the higher cluster, and the remaining 10% moved to the first cluster. 79% of firms that were in the third cluster in 1996 remained in this category, 19% of them moved to the second cluster and the remaining 2% dropped down to the lowest, first, cluster.

Table 2.13: Movement in C1 concentration clusters: 1996–1999

		Cluster in 1999		
		1	2	3
Cluster in 1996	1	40%	39%	21%
	2	10%	53%	37%
	3	2%	19%	79%

2.2.3. Changes in Type of Single Largest Owner

We complement the above analysis of changes in ownership concentration by an analysis of changes in the type of the single largest owner of a given firm. In our data set we distinguish six types of owners: industrial companies, banks, investment funds, individual owners, portfolio companies, and the state. The difference between an investment fund and a portfolio company is defined as follows. An investment fund buys shares of a certain company in order to exercise voting rights and to acquire profit from the company later. On the other hand, the portfolio company buys shares of a certain firm in order to sell these shares for a higher price in order to realize a capital gain. The portfolio company does not attempt to exercise voting rights or extract corporate profits.

Here we will analyze the evolution of the mean ownership position of the single largest owner, using the above typology. Table 2.14 shows the mean and standard deviation of the C1 index. The computed mean is an arithmetic average of all shares of owners belonging to a particular group of owners, and is calculated only for those firms in which this group appears as the single largest owner.

Table 2.14: Ownership position of the particular types of single largest owner

Type of the single largest owner	**Descriptive statistics for C1 index of respective owner type**					
	Year	Number of observations	Mean	Std. Dev.	Min	Max
Industrial company	1996	337	44.82	20.04	0.03	100
	1999	442	54.27	21.64	5.49	100
Bank	1996	25	36.41	18.95	9.15	75.98
	1999	18	41.20	22.65	3.46	82.53
Investment fund	1996	171	28.82	17.33	0.41	96.68
	1999	116	43.16	21.22	1.44	95.4
Individual	1996	104	34.45	15.75	2.86	74
	1999	132	43.29	22.23	0.36	92.22
Portfolio company	1996	56	35.90	18.57	1.23	85.64
	1999	22	50.93	25.91	0.03	91.02
State	1996	55	35.62	20.47	1.03	95
	1999	18	46.16	23.95	5	100

We can see an increase in the mean value of C1 for all types of owners from 1996 to 1999. The highest mean value of C1 is for firms in which an industrial company is the single largest owner in 1996 (44.8%), and this group continues to have the highest mean C1 in 1999. Firms dominated by investment funds have the lowest mean C1 in 1996. However, in 1999 the mean values of C1 in these firms reach values comparable with those for firms with other types of owners. In general, the highest average concentration increase between 1996 and 1999 was recorded in the case of firms with investment funds (50% increase) and portfolio companies (40% increase) as the single largest owners. A negligible change can be observed in the case of banks (4% increase).

Since the mean share has only limited explanatory power, Figures 2.3 and 2.4 (see Appendix) present the entire densities of ownership concentration by category of single largest owner over four consecutive years. We can see that over the time the shapes of the distributions change decisively. An increase in C1 is clearly visible in the movement of the humps from left to right. When we recall Figure 2.1 we can state that the two-hump density distribution of ownership concentration is caused by the presence of this pattern in the ownership positions of industrial companies, investment funds, and individual owners. The disappearance of this bimodal shape is the most prominent feature in the case of investment funds. Stakes of the state exhibit the largest tendency to increase over time, while their number decreases. This is in accord with the aim of the State to sell residual state property but to maintain power in companies of special interest.

Table 2.15 summarizes information about changes with respect to the type of the single largest owner between 1996 and 1999. We identify the following trends:

a) Industrial companies are the most stable type of single largest owner, followed by individual owners. In 76% of firms whose single largest owner in 1996 was an industrial company, the same was true in 1999, whereas 57% of firms with individual owners in 1996 remained in this category in 1999.
b) The most unstable type of owner is the portfolio company. Only 5% of firms with such dominant owners in 1996 still had them in 1999.
c) The industrial company category is the owner category that recorded by far the largest ownership gains.

Table 2.15: Changes in ownership concentration by type of single largest owner: 1996–1999

Type of single largest owner in 1996	Type of single largest owner in 1999						
	Industrial company	Bank	Invest. Fund	Individual	Portfolio company	State	Total
Industrial co.	*76%*	1%	7%	11%	3%	1%	100%
Bank	40%	*24%*	20%	8%	8%	0%	100%
Invest. Fund	54%	2%	*33%*	10%	1%	0%	100%
Individual	32%	2%	7%	*57%*	3%	0%	100%
Portfolio co.	46%	2%	29%	18%	*5%*	0%	100%
State	42%	4%	13%	13%	4%	*25%*	100%

Table 2.16: Distribution of firms by a single largest owner across sectors: 1996 and 1999

	1996				1999			
	Lower Concentration		Higher Concentration		Lower Concentration		Higher Concentration	
Prague Stock Exchange Sector Category	No. of Firms	Percent	No. of Firms	Percent	No. of Firms	Percent	No. of Firms	Percent
Agriculture	17	5.59	13	4.21	5	3.29	25	5.42
Food production	15	4.93	15	4.85	7	4.61	23	4.99
Production of beverages & tobacco	5	1.64	6	1.94	1	0.66	10	2.17
Mining	1	0.33	3	0.97	0	0	4	0.87
Textiles	15	4.93	15	4.85	10	6.58	20	4.34
Wood and paper industry	8	2.63	11	3.56	3	1.97	16	3.47
Chemicals, pharmaceuticals & rubber	8	2.63	13	4.21	0	0	21	4.56
Construction and building materials	**37**	**12.17**	**41**	**13.27**	**26**	**17.11**	**52**	**11.28**
Metallurgy and metal processing	10	3.29	16	5.18	4	2.63	22	4.77
Mechanical engineering	**36**	**11.84**	**45**	**14.56**	**15**	**9.87**	**66**	**14.32**
Electrical engineering & electronics	15	4.93	8	2.59	9	5.92	14	3.04
Utilities	8	2.63	2	0.65	1	0.66	9	1.95
Transportation & telecommunication	9	2.96	12	3.88	2	1.32	19	4.12
Trade	**29**	**9.54**	**23**	**7.44**	**16**	**10.53**	**36**	**7.81**
Finance & banking	2	0.66	0	0	0	0	2	0.43
Services	**32**	**10.53**	**50**	**16.18**	**16**	**10.53**	**66**	**14.32**
Glass, ceramics & jewelry	7	2.3	4	1.29	2	1.32	9	1.95
Investment funds	**45**	**14.8**	**23**	**7.44**	**35**	**23.03**	**33**	**7.16**
Others	5	1.64	9	2.91	0	0	14	3.04

Note: Lower Concentration denotes firms where the single largest owner holds less than 35 percent.
Higher Concentration denotes firms where the single largest owner holds more than 35 percent.

The evidence is presented by increases recorded in the first column of the table.

We also explore the question whether there are any differences among firms with respect to industry and degree of ownership concentration. Based on our earlier discussion (Figure 2.1) we divide firms into two groups. The first group contains firms where a single largest owner holds less than 35% and the second group those where this stake is larger than 35%. The single largest owners are then broken down into the 19 branch categories of the Prague Stock Exchange. Table 2.16 presents the data in compact form for years 1996 and 1999.

From the table we can derive two sets of observations. The first set is based on the percentages of firms with both lower and higher ownership concentration. In both years the firms in our sample exhibit a tendency to group into five branches. These are: construction and building materials, mechanical engineering, trade, services, and investment funds. The five branches alone represent about 60% of the firms in our sample. Since our sample covers almost half of the firms privatized under the voucher scheme, we do not attribute this finding to either a selection bias or a coincidence. The cluster resembles, to a large extent, the composition of the Czech GDP if we adopt a loose definition of the branches of production.

The second set of observations is derived from a comparison of lower and higher ownership concentration alone over time. In all other branches than the five aforementioned ones, there are no essential differences between the percentage of firms in which the single largest stake is below the 35% threshold and those where it is above it. Moreover, in 1996 the same is true for the branches of trade, construction and building materials, and mechanical engineering. Services and investment funds, however, are different in this respect: a much higher percentage of service firms has higher ownership concentration, while the opposite is true for investment funds.

The situation was radically different in 1999. In the five most strongly represented branches, differences in the proportions of companies with high and low ownership concentration widened in comparison with 1996. Mechanical engineering and services were dominated by higher ownership concentration. Construction and building materials, trade, and investment funds, on the other hand, were dominated by lower ownership concentration.

2.3. Ownership and Economic Performance

2.3.1. Overview and Motivation

In this section we investigate relationships between the ownership structure and economic performance of firms. In particular we address the following questions: (1) whether the change in ownership concentration has an impact on firm's performance, and (2) whether any particular type of shareholder has an impact on performance of the firm.

It is standard wisdom that dispersion of ownership has an adverse effect on performance of the firm. Shleifer and Vishny (1997) survey research on corporate governance, with special attention to the importance of legal protection of investors and of ownership concentration in corporate governance systems around the world. McConnel and Servaes (1990) examine the impact of ownership structure on company economic performance in the largest European companies. Controlling for industry, capital structure and nation effects, a positive effect of ownership concentration on the market-to-book value of equity and profitability is found. Furthermore, they propose and support the hypothesis that the identity of large owners – family, bank, institutional investor, government, and other companies – has important implications for corporate strategy and performance. The effect of ownership concentration is also found to depend on owner identity. On the other hand, studies by Coase (1988) or Demsetz and Lehn (1985) argue that the relationship between ownership concentration and corporate performance is spurious. Leech and Leahy (1999) also found that control type effects have no clear effect on firm performance.

Frydman, Gray, Hessel, and Rapaczynski (1999) compare the performance of privatized and state firms in the transition economies of Central Europe. They argue that where privatization is effective, the effect on revenue performance is very pronounced, but there is no comparable effect on cost reduction. Smith, Cin, and Vodopivec (1997) examine the relationship between employee and foreign ownership and firm performance. They find that a percentage point increase in foreign ownership is associated with about a 2.9 percent increase in value added, whereas a percentage point increase in employee ownership increases value added by about 1.4 percent. Claessens and Djankov (1999b) found that the more concentrated the ownership, the higher the firm's profitability and labor productivity. Estrin and Rosevear (1999) explore whether specific ownership forms have led to differences in performance of firms in Ukraine. Using profit, sales, and employment as performance proxies, they refute the hypothesis that private ownership per se is associated with improved performance.

For our further analysis we define a broad set of financial variables in order to capture different aspects of enterprise performance such as profitability, strength and size of the firm, its financial position, and its scope of business activity. The set of variables we use is divided up as follows:

1. Profitability: as measures of profitability we employ the ratio of gross operating profit to sales revenue, percent growth in operating profit, and the ratio of value added to labor costs (wages).

Table 2.17: Basic characteristics of financial variables: 1996

	Mean	Std. dev.	Min	Max
Gross operating profit / Sales	-1.25	29.45	-789.64	193.73
Operating Profit	35272	509538	-1554369	15917941
Value Added / Labor Costs	1.12	19.26	-600.13	128.05
Cash Flow / Equity	45.47	682.34	-3036.44	21264.30
Total Assets	1022695	5433036	2072	158300000
Fixed Assets	633357	4577724	0	139200000
Long-term Bank Loans	75249	392608	0	10164704
Short-term Bank Loans	107366	456137	0	11165678
Sales of Own Production	605014	2322785	0	55494496

2. Strength and size: we use change in total assets, change in fixed assets, and the ratio of cash-flow to equity.
3. Financial position: we use the change in long-term and short-term bank loans.
4. Scope of business activity: we measure this performance in terms of sales of own production.

The summary statistics for the above financial variables in 1996 are shown in Table 2.17. The sample clearly represents a very diverse group of firms with both poor and good economic performance.

Moreover, in order to capture the effect of the type of owner on a firm's performance, we introduce two types of dummy variables for the type of an owner. The first one is a dummy variable indicating whether the single largest owner belongs to one of five different categories of owners. The second indicates the share for each category of owner in the share capital of a given firm. This approach allows us to investigate a broader picture of the relationship of ownership concentration and its structure with a firm's performance than is usual in the current literature.

Overall, we analyze eight different performance variables (in contrast to the two or three that are usually examined in the literature). We use the previously described ownership data together with financial data of Czech firms listed on the Prague Stock Exchange (PSE) for the years 1996–1999. All financial variables were defined using international accounting standards. Our sample consists of 543 different firms that posted data for three (75 percent of the sample) or four (25 percent of the sample) consecutive years during the 1996–1999 period.

In our econometric analysis we have to deal with problems of endogeneity of the ownership structure and autocorrelation in the values of the financial variables. We use an equivalent of the first differences of logarithms of ownership concentration to eliminate the endogeneity problem. The autocorrelation of financial variables is rather high (around 0.8–0.9). In the regressions we use growth variables of the respective variables rather than their nominal values to deal with this problem. The interpretation of coefficients of the growth variables is therefore easy and straightforward.

In the current ownership literature relationships are investigated principally from the point of view of the effect of financial performance on the ownership structure, rather than that of the ownership structure on financial variables. It would be interesting to examine the former relationship between these two kinds of variables; however, the very short time series (3 or 4 years) prevents us from doing it. Therefore, we present an analysis of the effect of the ownership structure on economic performance.

Thus, we analyze the relationship between ownership structure and company performance by employing three different panel-data models:

Model I

$$gPer_{i,t} = \alpha + \beta\, dC1_{i,t} + \sum_{j=1}^{K} \gamma_j I_j + \sum_{m=1}^{3} \eta_m Y_m + u_i + \varepsilon_{i,t}$$

Model II

$$gPer_{i,t} = \alpha + \beta\, dC1_{i,t} + \sum_{n=1}^{L} \xi_n OS_{n,t} + \sum_{j=1}^{K} \gamma_j I_j + \sum_{m=1}^{3} \eta_m Y_m + u_i + \varepsilon_{i,t}$$

Model III

$$gPer_{i,t} = \alpha + \beta\, dC1_{i,t} + \sum_{n=1}^{L} \xi_n O_{n,t} + \sum_{j=1}^{K} \gamma_j I_j + \sum_{m=1}^{3} \eta_m Y_m + u_i + \varepsilon_{i,t}$$

where: $gPer_{i,t}$ is defined as the growth of a given performance variable – that is, $gPer_{i,t} = (Per_{i,t} - Per_{i,t-1})/Per_{i,t-1}$; $DCI_{i,t}$ is the difference of ownership concentration indices between two consecutive years, namely $dCI_{i,t} = CI_{i,t} - CI_{i,t-1}$; $OS_{n,t}$ is the share of each category of owners (industrial company, bank, investment fund, individual owner, portfolio company and state [$L = 5$]) in total ownership of a given firm in a given year, and $O_{n,t}$ is a set of dummy variables that indicate the type of the single largest owner in a given year (the typology of owners is the same as in the case of the $OS_{n,t}$ variables [$L = 5$]). I_j is a set of industry dummy variables. The Prague Stock Exchange classification contains 19 different types of industries, ($K = 18$); Y_m are year dummies to correct for changes in the institutional environment as well as economy-wide shocks in a given year; u_i represents the random effect.

Sector dummies, I_j, are used to capture the sector-specific shocks. There are 19 different types of industries; however, for two of them – finance and banking, and investment funds – we do not have data. $OS_{n,t}$ variables are an alternative specification of the $O_{n,t}$ variables. The difference between $O_{n,t}$ and $OS_{n,t}$ is that $O_{n,t}$ captures specifically the type of the single largest owner, whereas $OS_{n,t}$ captures the cumulative shares of all other owners of the same type in the firm.

2.3.2 Empirical Results

Results of all estimations are presented in Tables 2.18-2.23 (see Appendix). In all regressions, using the F-test we reject the hypothesis that a common constant term across firms is appropriate. Moreover, the Hausman specification test (Hausman, 1978) in all cases indicates that the random effect model is more appropriate than a fixed effect model. Regarding sets of dummies, we choose state ownership and year 1996 as a common numeraire. Given the insignificance of the respective dummy variables, no industry was found to have a specific effect with respect to performance.

First, we estimate Model I. Based on our results we conclude that ownership concentration does not explain changes in performance. Since the coefficients of the variable for change in the index of concentration for the single largest owner have different signs and magnitudes, it is tempting to discuss their effect on performance. However, we are left with their statistical insignificance.

Demsetz and Lehn (1985) argue that one should use the logarithmic transformation of C1 or C5 index instead of its usual values. This is done to convert the bounded independent variable C1 into an unbounded one, defined as a logarithmic transformation ln[C1/(100-C1)]. We checked whether our results are sensitive to this transformation of ownership concentration and performed an analysis with the newly defined concentration variable as well. However, all coefficients of the transformed ownership concentration variable were again insignificant. Therefore, we consider our results to be robust with respect to changes in the definition of ownership concentration.

Claessens and Djankov (1999b) performed a similar type of regression on Czech firm data. They used only two measures of performance: profitability and labor productivity. Their definition of profitability is very similar to ours; therefore their results can be cautiously compared with ours. However, the difference is that they used data for the years 1993–1996. In their regression, where they take into account endogeneity and the autocorrelation of performance variables, they found the ownership concentration (and its square) to be insignificant for the profitability of the firm. Since we use a different time span of data, as well as a different data set, we conclude that our results are in line with theirs. Regarding labor productivity they find ownership concentration significant. Since we do not have data on employment, we could not construct any variable which would capture changes in employee productivity and make any comparison with their findings.

We turn to the analysis of the effect of the type of owner on performance. Models II and III were estimated for this purpose. We regress the performance variables on ownership concentration and type of owner along with yearly and industry dummies. In the literature (Claessens and Djankov, 1999b) it is usual to construct the share of ownership of each category in the total share capital of a given firm. Since we are using the C1 index (the share of the single largest owner), we construct the set of dummy variables indicating the type of owner of this largest share. For comparative purposes we report results for the cumulative share of given types of owners as well.

Based on estimations of type II and III models we found the coefficient of change in ownership concentration to be insignificant in all regressions. This fact is in line with our results from Model I, and we conclude, therefore, that there is no evidence for an effect of ownership concentration on performance.

As for the effect of a particular type of owner, the results do not provide evidence that, in general, the type of owner has an effect on a firm's performance. Most relevant coefficients were found to be statistically insignificant. However, there exists clear and convincing evidence about the effect of two types of owners on specific performance measures.

Based on our results from the estimation of Model III, we argue that when a portfolio company is the single largest owner, gross operating profit/sales, operating profit, and total and fixed assets have higher growth rates. The evidence of the effect of this type of owner on performance is provided in Tables 2.18-19 and 2.21. The results for fixed assets are not reported. Similar results based on the estimation of Model II are valid for the cumulative share of portfolio companies in each firm. Higher growth rates are observed with respect to operating profit and total and fixed assets (Tables 2.19 and 2.21).

The other result is that the presence of an individual as the single largest owner is positively linked with growth rates of sales of own production. We see this in the estimation of Model III presented in Table 2.23.

No evidence of any effects of specific types of owners was found for the other two performance criteria: the ratio of value added to labor costs (Table 2.20) and the ratio of cash flow to equity (not reported).

2.4. Concluding Comments

The years 1991–1995 were marked by an ongoing process of voucher privatization. The resulting ownership

structure after both waves were concluded was more or less an outcome of the logistic procedure of how the voucher scheme was administered. In 1995 changes in ownership also reflected legal requirements to prevent excessive stakes being held by privatization funds. More economically meaningful patterns of ownership structure began to emerge in Czech companies in 1996.

Our analysis of changes in ownership structure and their effect on firms' economic performance yielded a set of important results. The results from the immediate post-privatization period show that between 1996 and 1997 the ownership concentration in a sample of voucher-privatized companies generally increased. The highest concentration was found for domestic and foreign strategic investors, the lowest for banks and portfolio investment companies. The largest *increase* in ownership concentration was recorded for the category of state ownership and domestic strategic investors, followed by investment funds (in particular, non-bank-sponsored PIFs).

Further changes were observed in the years from 1996 to 1999. The ownership concentration in voucher-privatized firms was analyzed with respect to different concentration levels. The single largest shareowner emerged as a decisive shareholder. We identified three more or less distinct intervals of ownership concentration with respect to which we were able to identify important changes in this period. These are the intervals where a single largest owner holds 0–35, 35–63, and 63–100 percent of shares. During this period, voucher-privatized firms experienced the largest changes in ownership concentration in that part of the sample in which the single largest owner held a stake of 15 to 35 percent of shares.

The overall change during years 1996–1999 can be characterized as follows: Only 40% of the firms belonging to the first interval in 1996 remained in this cluster in 1999. On the other hand, 53% of all firms belonging to the second interval <35%,63%> in 1996 remained in this cluster through 1999, and 79% of those that were in the third cluster in 1996 remained there in 1999.

The changes in ownership structure were analyzed with respect to six types of owners: industrial companies, banks, investment funds, individual owners, portfolio companies, and the state. In general, the highest average concentration increase between 1996 and 1999 was recorded in the case of investment funds (50% increase) and portfolio companies (40% increase) as the single largest owners. A negligible change was observed in the case of banks (4% increase).

More detailed information about changes in type of the single largest owner between the years 1996 and 1999 can be summarized in the following observations. Industrial companies are the most stable type of single largest owner, followed by individual owners. The least stable type of owner is the portfolio company. In 1999 only 5% of the sample had the same such single largest owner as in 1996. Industrial companies were the owner category that saw by far the largest ownership gains over the analyzed period.

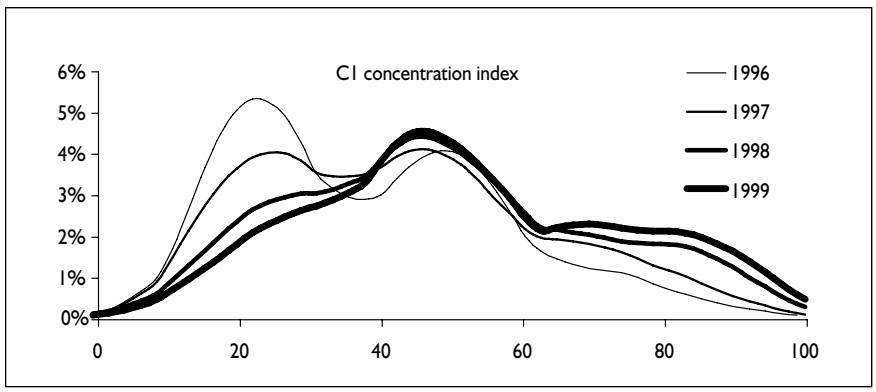
Based on the branch division used by the Prague Stock Exchange (19 industry categories) we conclude that there are no notable differences across sectors with respect to the ownership share held by the single largest owner in 1996. This outcome is different in 1999, when such sector specific features are present for five categories. Furthermore, we observe that in our sample firms are concentrated in five sectors: construction and building materials, mechanical engineering, trade, services, and investment funds. These five sectors cover about 60% of the sample in 1996 and 1999.

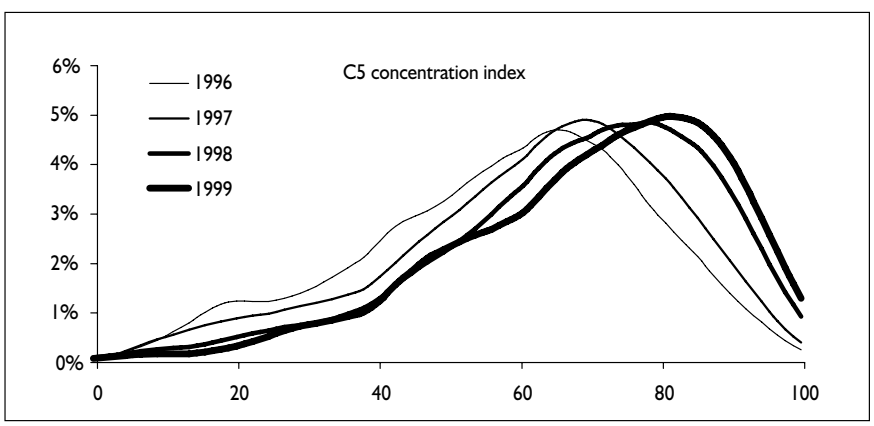
In an econometric analysis of performance we defined a broad set of financial variables in order to capture different aspects of enterprise performance. These included profitability, strength and size of the firm, its financial position, and its scope of business activity. Moreover, in order to capture the effect of the type of owner on the firm's performance, we incorporated into our models two types of dummy variables for five different categories of owners, and the share of ownership per each category in the total share capital of each firm. Based on pre-testing procedures we adopted a random effect model.

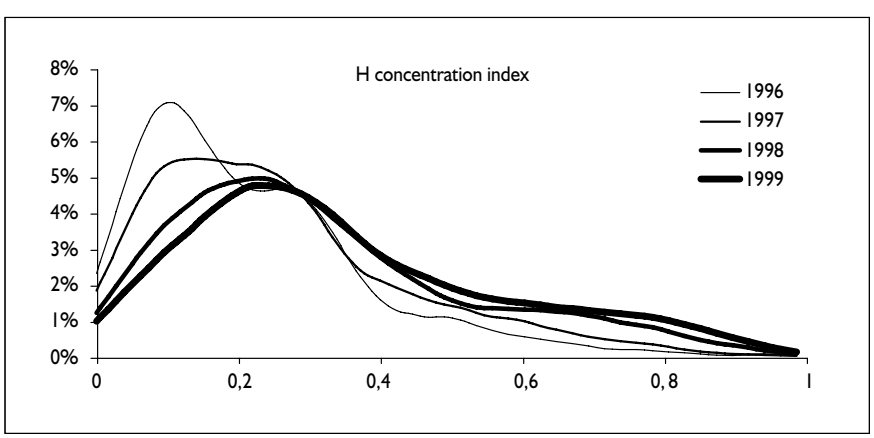
Based on our results we conclude that ownership concentration does not explain changes in performance. Furthermore, no industry was found to have a specific effect with respect to firm performance. Using the random effect model, we find that if the single largest stake is in possession of a portfolio company, the change in total and fixed assets, gross operating profit/sales, and operating profit is higher than in other cases (where coefficients were insignificant). In addition, firms where an individual is the single largest owner exhibit higher growth of sales of own production. No evidence of an effect of the type of owner was found for the other two performance criteria: the ratio of value added to labor costs and the ratio of cash flow to equity.

Appendix

Figure 2.1: Density functions of concentration indexes for firms involved in voucher privatization

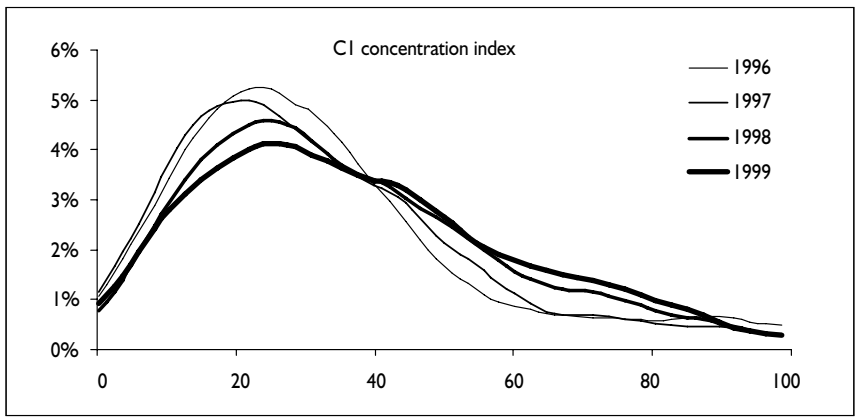


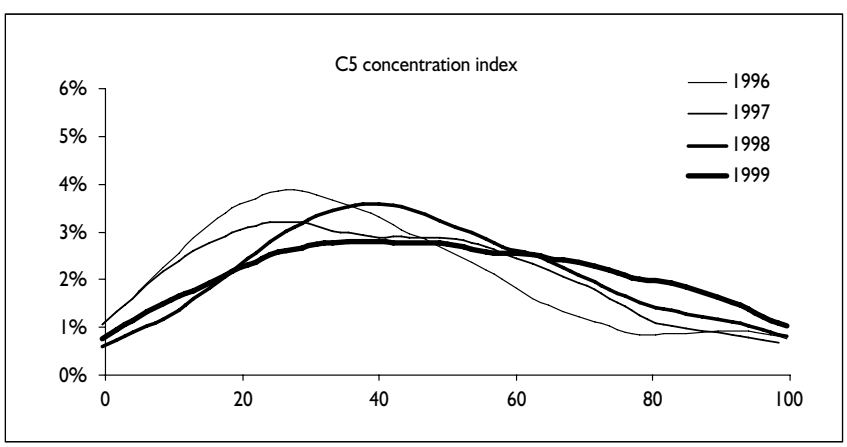


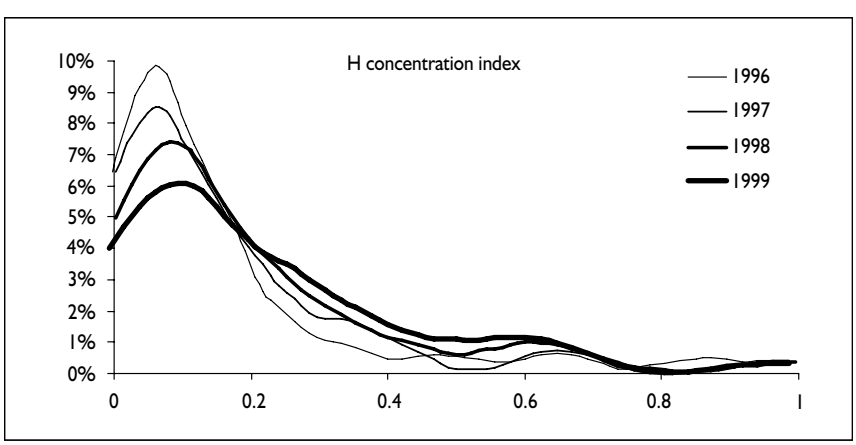


C1 represents the average percentage of the equity owned by the single largest investor and C5 that held by five largest investors. H stands for Herfindahl index of ownership concentration.

Figure 2.2: Density functions of concentration indexes for firms not involved in voucher privatization







C1 represents the average percentage of the equity owned by the single largest investor and C5 that held by five largest investors. H stands for Herfindahl index of ownership concentration.

Figure 2.3: Densities of ownership concentration by category of single largest owner (C1)

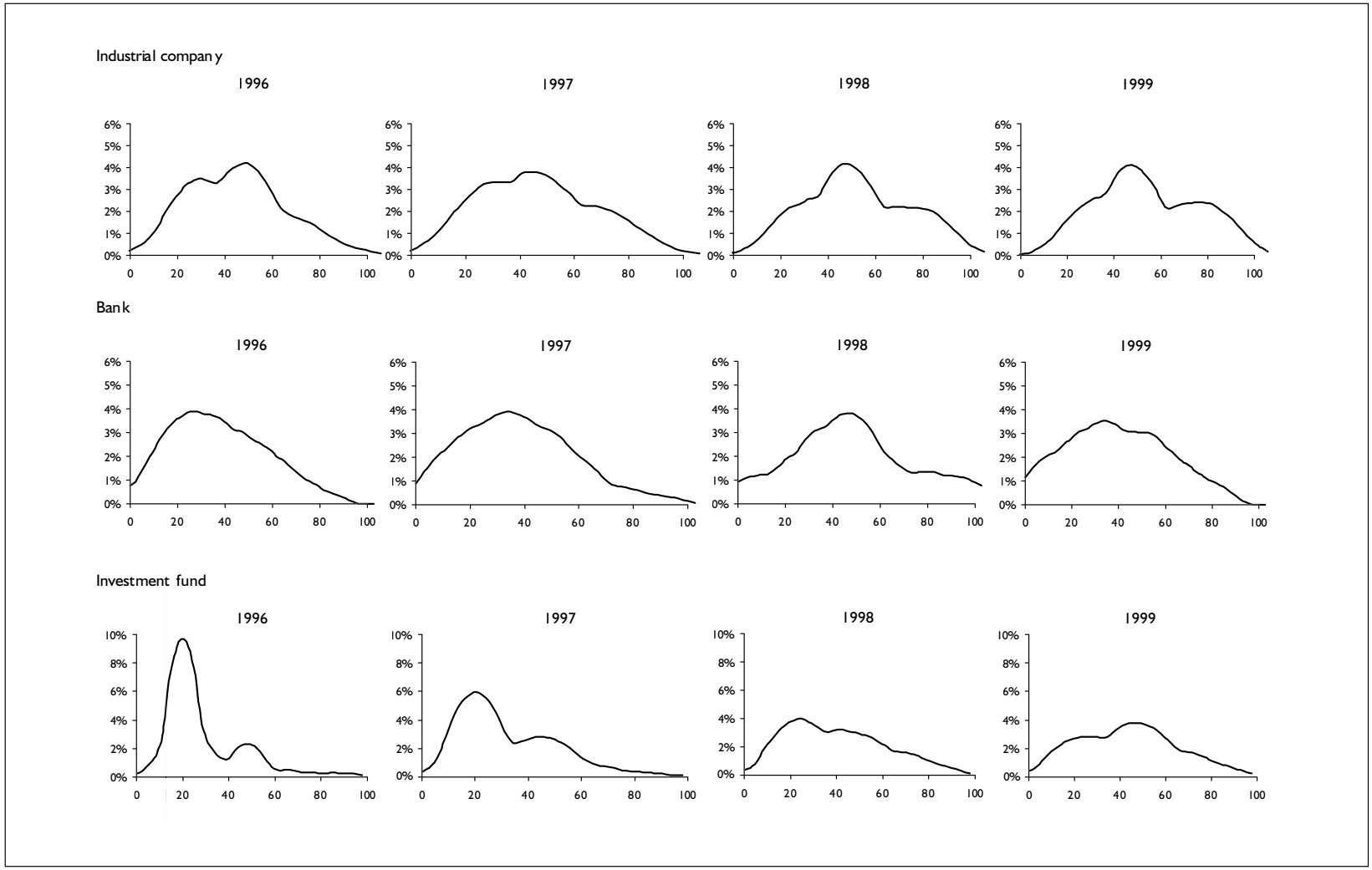


Figure 2.4: Densities of ownership concentration by category of single largest owner (C1)

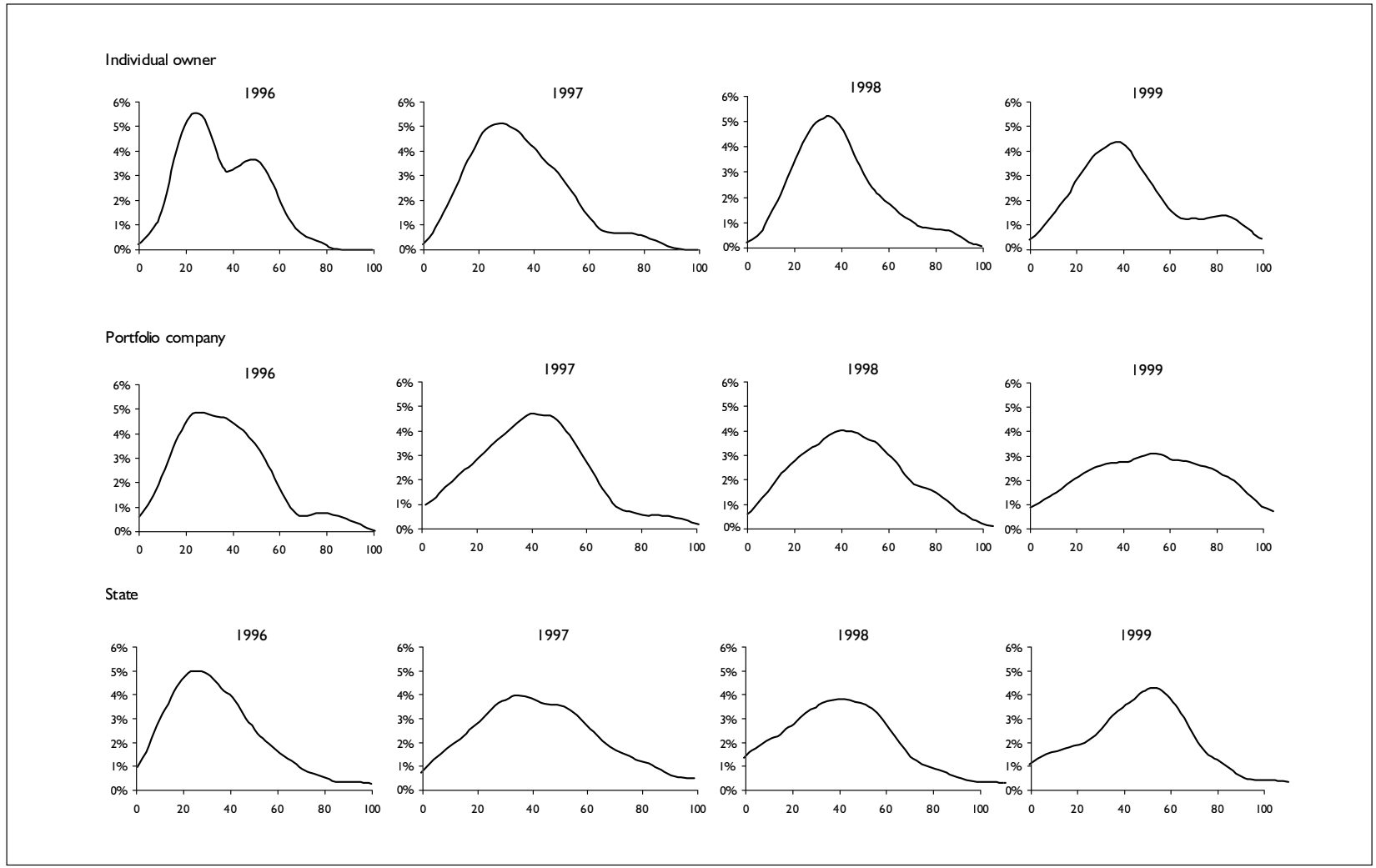


Table 2.18: Gross operating profit/sales

	Model I	Model II	Model III
Change in C1	0.0030	-0.0013	0.0014
	(0.023)	(0.023)	(0.023)
Type of owner share in total ownership			
Industrial Company	-	0.7662	-
	-	(1.856)	-
Bank	-	0.2442	-
	-	(3.962)	-
Investment Fund	-	0.3031	-
	-	(2.017)	-
Individual Owner	-	0.2066	-
	-	(2.027)	-
Portfolio Company	-	5.1942[c]	-
	-	(2.885)	-
Type of owner dummy			
Industrial Company	-	-	0.7170
	-	-	(1.491)
Bank	-	-	0.2483
	-	-	(3.059)
Investment Fund	-	-	0.0733
	-	-	(1.632)
Individual Owner	-	-	0.1197
	-	-	(1.682)
Portfolio Company	-	-	0.0531
	-	-	(2.275)
Industry dummies	Yes	Yes	Yes
Yearly dummies	Yes	Yes	Yes
R^2	0.0051	0.0073	0.0055

Note: Standard errors are in parenthesis.
c denotes significance at 10% level.
Yes means that specific dummies are included in regression

Table 2.19: Operating profit

	Model I	Model II	Model III
Change in C1	0.0177	0.0072	0.0093
	(0.080)	(0.080)	(0.080)
Type of owner share in total ownership			
Industrial Company	-	5.9015	
	-	(6.577)	-
Bank	-	9.3725	-
	-	(14.892)	-
Investment Fund	-	4.6823	-
	-	(7.187)	-
Individual Owner	-	10.6443	-
	-	(7.228)	-
Portfolio Company	-	31.3160[a]	-
	-	(10.372)	-
Type of owner dummy			
Industrial Company	-	-	3.1672
	-	-	(5.140)
Bank	-	-	5.2751
	-	-	(12.245)
Investment Fund	-	-	3.0760
	-	-	(5.629)
Individual Owner	-	-	6.4628
	-	-	(5.781)
Portfolio Company	-	-	20.0454
	-	-	(8.206)
Industry dummies	Yes	Yes	Yes
Yearly dummies	Yes	Yes	Yes
R^2	0.0080	0.0204	0.0160

Note: Standard errors are in parenthesis.
a denotes significance at 1% and 5% level respectively
Yes means that specific dummies are included in regression

Table 2.20: Value added/staff costs

	Model I	Model II	Model III
Change in CI	0.0194	0.0192	0.0183
	(0.031)	(0.032)	(0.032)
Type of owner share in total ownership			
Industrial Company	-	0.2854	-
	-	(2.771)	-
Bank	-	-0.4082	-
	-	(5.811)	-
Investment Fund	-	-0.6018	-
	-	(3.009)	-
Individual Owner	-	0.6067	-
	-	(3.041)	-
Portfolio Company	-	-0.7262	-
	-	(4.196)	-
Type of owner dummy			
Industrial Company	-	-	0.7409
	-	-	(2.213)
Bank	-	-	0.1772
	-	-	(4.454)
Investment Fund	-	-	-0.1018
	-	-	(2.412)
Individual Owner	-	-	0.6341
	-	-	(2.502)
Portfolio Company	-	-	-0.0041
	-	-	(3.284)
Industry dummies	Yes	Yes	Yes
Yearly dummies	Yes	Yes	Yes
R^2	0.0024	0.0024	0.0024

Note: Standard errors are in parenthesis.
Yes means that specific dummies are included in regression

Table 2.21: Total assets

	Model I	Model II	Model III
Change in CI	-0,0152	-0.0194	-0.0187
	(0.013)	(0.013)	(0.013)
Type of owner share in total ownership			
Industrial Company	-	0.3225	-
	-	(1.053)	-
Bank	-	0.6346	-
	-	(2.385)	-
Investment Fund	-	0.1788	-
	-	(1.151)	-
Individual Owner	-	0.1807	-
	-	(1.157)	-
Portfolio Company	-	9.4635[a]	-
	-	(1.661)	-
Type of owner dummy			
Industrial Company	-	-	0.1932
	-	-	(0.828)
Bank	-	-	0.3500
	-	-	(1.972)
Investment Fund	-	-	0.2438
	-	-	(0.906)
Individual Owner	-	-	0.0430
	-	-	(0.930)
Portfolio Company	-	-	6.3006
	-	-	(1.322)
Industry dummies	Yes	Yes	Yes
Yearly dummies	Yes	Yes	Yes
R^2	0.0156	0.0630	0.0481

Note: Standard errors are in parenthesis.
a denotes significance at 1% level.
Yes means that specific dummies are included in regression

Table 2.22: Long-term bank loans

	Model I	Model II	Model III
Change in CI	0.0087	0.0009	0.0040
	(0.031)	(0.032)	(0.031)
Type of owner share in total ownership			
Industrial Company	-	-0.8197	-
	-	(3.562)	-
Bank	-	-1.6457	-
	-	(7.609)	-
Investment Fund	-	-3.4014	-
	-	(3.894)	-
Individual Owner	-	-2.5290	-
	-	(3.982)	-
Portfolio Company	-	-0.2492	-
	-	(4.954)	-
Type of owner dummy			
Industrial Company	-	-	-1.3920
	-	-	(2.624)
Bank	-	-	-1.6459
	-	-	(6.531)
Investment Fund	-	-	-3.9758
	-	-	(2.833)
Individual Owner	-	-	-2.9188
	-	-	(2.930)
Portfolio Company	-	-	-2.1507
	-	-	(3.550)
Industry dummies	Yes	Yes	Yes
Yearly dummies	Yes	Yes	Yes
R^2	0.0237	0.0252	0.0265

Note: Standard errors are in parenthesis.
Yes means that specific dummies are included in regression

Table 2.23: Sales of own production

	Model I	Model II	Model III
Change in CI	-0.0141	-0.0089	-0.0041
	(0.040)	(0.041)	(0.041)
Type of owner share in total ownership			
Industrial Company	-	0.1782	-
	-	(3.294)	-
Bank	-	-0.4453	-
	-	(7.381)	-
Investment Fund	-	0.0369	-
	-	(3.600)	-
Individual Owner	-	4.4348	-
	-	(3.616)	-
Portfolio Company	-	-1.3653	-
	-	(5.407)	-
Type of owner dummy			
Industrial Company	-	-	-0.1456
	-	-	(2.557)
Bank	-	-	-0.6937
	-	-	(6.034)
Investment Fund	-	-	0.1288
	-	-	(2.800)
Individual Owner	-	-	5.1958[c]
	-	-	(2.883)
Portfolio Company	-	-	-0.9929
	-	-	(4.200)
Industry dummies	Yes	Yes	Yes
Yearly dummies	Yes	Yes	Yes
R^2	0.0120	0.0178	0.0227

Note: Standard errors are in parenthesis.
c denotes significance at 10% level
Yes means that specific dummies are included in regression

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